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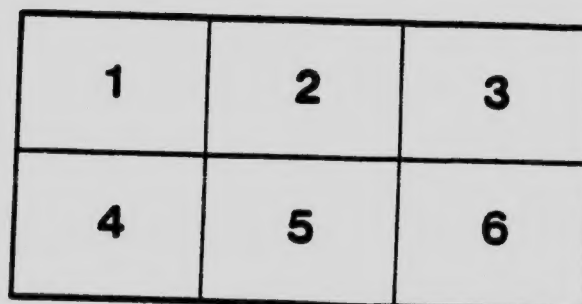
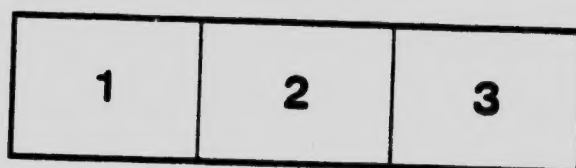
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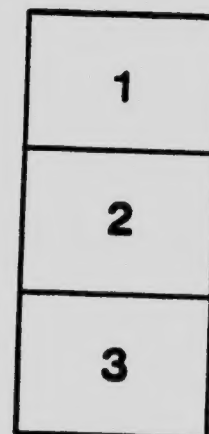
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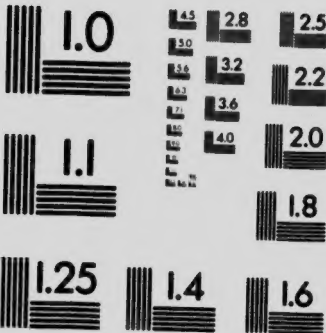
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p. 93

Frederick Hamilton

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MANUAL TRAINING

AND

HIGH SCHOOL COURSES OF STUDY

REPORT OF JOHN SEATH, B.A., HIGH SCHOOL INSPECTOR (ONTARIO),
ON THE MANUAL TRAINING SCHOOLS OF THE UNITED STATES,
WITH SUGGESTIONS AS TO CHANGES IN THE
COURSES OF STUDY IN THE
HIGH SCHOOLS OF
ONTARIO.

ISSUED AS AN APPENDIX TO THE REPORT OF THE MINISTER OF EDUCA-
TION (ONTARIO) FOR THE YEAR 1900.

PRINTED BY ORDER OF
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TORONTO:

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MANUAL TRAINING

AND

HIGH SCHOOL COURSES OF STUDY.

The Hon. the Minister of Education for Ontario :

Sir ;—In accordance with your letter of instructions of Aug. 30th 1901, directing me

(1) To visit the Manual Training Schools of the United States and to embody my views on the subject in a report ; and

(2) To consider and report upon the present High School courses of study with suggestions regarding any desirable improvements to be made when next the regulations are amended;

I beg leave to submit that, having in view the two subjects on [which I had to report, I not only made myself acquainted with the character of the work in what I had reason to believe were the chief and typical Manual Training centres in the United States, but I discussed this and other phases of education with some of the leading educationalists in that country. And, further, especially during the past half year, I have taken pains to find out from Ontario educationalists and other classes of citizens what changes they think desirable in our present courses of study. The following report contains the result of the special investigation I have just completed and of my own experience as inspector and teacher. I have the honor to be, sir,

Your obedient servant,

TORONTO, Feb. 9th, 1901.

JOHN SEATH.

PART I. MANUAL TRAINING.

The three expressions Manual Training, Industrial Education, and Technical Education are at present often used synonymously. Although similar in meaning, they are, however, not identical, and it is well at the outset to define our terms. Manual training, according to educationalists, properly means any training in hand-work designed to improve the powers of the mind. In a restricted sense, it means the training given in primary and secondary schools in working in wood and metal. In both the wider and the restricted sense, its aim is an educational one. Under this head we find included very generally the training in domestic work (sewing and cooking) and occasionally, but rarely properly, that in drawing. Some manual training is, of course, involved in sewing and cooking, but these subjects owe their importance and desirability chiefly to their utilitarian value. In its widest sense the term technical education is applicable to the training given for any special calling in life whether it be a trade or a profession. In its more usual and limited sense, it is synonymous with industrial education ; that is, the special education given those who are engaged in the industries or commercial production in general. The object of technical education differs from that of manual training in being an economic one. But technical education since it involves manual training has also an educational value ; and manual training as an economic one, especially in the later years of the secondary schools. Indeed, most of the manual training systems I saw in the United States had confessedly a double purpose, partly educational and partly economic, and the

advocates of this kind of training as part of a well organized scheme of public education urged its claims often from one of these points of view but still oftener from both. This simply means, of course, that the training of the mind through the hand and the eye is valuable for every boy and girl and especially valuable for those who are to engage in industrial pursuits.

TECHNICAL EDUCATION.

It is now generally held that a complete system of Technical Education consists of three parts:—

(1) The Manual Training courses of the elementary schools, not with the object of producing artisans of any kind but for education alone. These should be the foundation of all technical education.

(2) Special training in the technique of the different trades. For this the Trade School is the provision.

(3) Higher training in the fundamental principles of the sciences for fitting men in the broadest sense to become leaders in the application of science to art. This higher training is provided in the different schools of applied science—Polytechnic Institutes, Institutes of Technology, the Applied Science departments of the universities, etc.

In the Trade School practice is emphasized; the amount of theory is small. In the School of Applied Science, on the other hand, the prime object is the teaching of theory. Practice appears here, too; but only so far as it is needed in the illustration of theory or in research.

The most typical example we have of a system of technical education is the German one. As I will point out further on, it is different from those of the United States; and, though much beyond our capabilities, will be found to be very suggestive.

For the material of the following outline I am indebted to President Loudon's convocation address of 1899 and to Prof. Kirschman of Toronto University.

TECHNICAL EDUCATION IN GERMANY.

1. Elementary Manual Training.

So far as concerns manual training in wood with bench tools, the condition of Germany is not so advanced as that of many of the other European countries. There the trade-school idea, which led the way, has proved to be an obstacle to the primary educational movement. Now, however, the latter is gaining ground, and has gone so far that, according to the report of Mr. Sadler, the English commissioner, its claims for state aid have been recognized by the governments of Russia, Saxony, and Baden.

(a) In the *Volks-schule* (our public school), throughout the whole course (from the seventh to the fifteenth year), manual training is by state law compulsory for girls. It consists of instruction in sewing, knitting, mending, darning, embroidery, and making shirts, clothes, etc. (housekeeping and, occasionally, cooking are taken up in some city schools). The teacher, a woman, is not necessarily a public school teacher. She must, however, have passed a professional examination. Manual training is not compulsory for boys. As I have already said, in comparatively few states of the German confederation has it as yet been adopted, even as an optional subject. Where introduced it has been elementary, consisting usually of wood carving, basket-weaving, work in paper or cardboard, sometimes wire work, and rarely other metal work. It has no reference to special trades. The teacher may be an artisan. Drawing, however, is taught boys and girls in all the public schools.

(b) In the *Fortbildungs-schulen*,—supplementary schools for apprentices (our night schools), the general and the technical systems overlap. They vary according to locality and prevailing conditions, and are to be found in every town and city, but not always in the smaller villages. Attendance is compulsory for all apprentices up to 18 years of age, not, however, by state law (as in public schools), but by the municipalities or by the associated trade guilds of the cities, etc.

These supplementary schools aim at a continuation of the instruction given in the public schools, with elementary technical education. Their programme includes:

drawing, with modelling, its different branches being adapted to the needs of the trade (in Hamburg, for example, in 1898, no fewer than 40 trades were represented); book-keeping and commercial science (in its elements); arithmetic and mensuration; elementary economics, physics, chemistry, physiology and hygiene; German language and composition. Sometimes, also, in rare cases, we find manual training, similar to that given in public schools, but more adapted to the trades. This is especially the case in cities and districts with particular industries, and the manual training is then in close relation with the instruction in drawing and modelling. In cities like Nurnberg this instruction blends more or less with the higher technical school (*Kunstgewerbe-schule*). The teachers of the *Fortbildungs* school are mostly the public school teachers of the place, or some of them. But the technical teacher, that is, the drawing and modelling teacher, is in all the larger towns and cities an academically trained artist (painter, sculptor, architect, engraver, etc.) from the Polytechnicum, or Academy of Fine Arts. The lessons are given mostly in the evening, on Sunday before church time, or in the morning from 6 to 8. Usually there are no examinations, but there are annual exhibitions of the work of the pupils, open for about a week to the public. Prizes are sometimes given for the best work. In some places there are *Fortbildungs* schools for girls also.

(c) In all the high schools for girls, as in the public schools, manual work is compulsory, but it is of a more elaborate and refined character. In all the high schools for boys—gymnasium, real-gymnasium, realschule, *Hohere Burger-schule*, etc., instruction in freehand (with modelling) and technical drawing (projection, shading, etc.) is compulsory. But only in rare cases is there any manual training.

II. The Intermediate Technical Schools.

Next we have a numerous class of schools which prepare for certain (half-professional) positions, or for the higher trades. They are technical schools of a grade intermediate between the *Fortbildungs* school and the highest technical schools.

(a) Normal Schools. These include in their curriculum, in some instances, Manual Training, with sometimes special workshops for that purpose.

(b) Agricultural schools.

(c) *Baugewerk-Schulen*: Schools for the building trades, attended by bricklayers, stonemasons and carpenters.

(d) Technica: Schools for engineers, electricians, etc.

(e) Horticultural Schools.

(f) *Kunstgewerbe-Schulen*: Schools for higher artisans, as: jewellers, wood-carvers, engravers, lithographers, stone cutters, etc., with special reference to the artistic side of their trades.

(g) Military Schools: For the preparation of non-commissioned and commissioned officers.

(h) Navigation Schools.

(i) Technical Schools for special single trades, as the tanner schools, the watchmaker schools, weaver schools, glass industry schools, etc. There also are industrial schools for women in Saxony.

(j) Commercial Schools: French and English form part of the curriculum of these schools, and the pupils consist almost wholly of those engaged in business. At Hamburg, for example, of 174 in attendance in 1898, only four were not engaged in business.

III. The Highest Technical Schools.

The technical institutions of the highest grade are:—

(a) Universities: The universities in their science departments are intimately connected with the industries. These have sometimes agricultural departments also.

(b) Polytechnica, or "Technical High Schools." These rank with the universities and train men as engineers, architects, chemists, etc.

(c) The Bergakademie (Mining) at Freiberg (Saxony): This and the preceding class correspond to our School of Practical Science.

(d) Forestry Academies: For instance, at Newstadt, Eberswald, Aschaffenburg.

(f) Agricultural Academies: For instance, at Papelladorf near Berlin.

(g) **Military Academies:** Here commissioned officers, lieutenants, and captains receive a higher training after having served for some years as officers. So far as I can find out, no officer can become a major without having attended. There is also, I believe, a similar naval academy.

(h) **Kunst Academies:** Academies for fine art, for instance at Munich, Stuttgart, Berlin, Düsseldorf, Darmstadt, Dresden, etc.

Only those who attend these highest academic institutions are entitled to call themselves students or academic citizens. All students of universities, polytechnica and the other academies have equal rank with the commissioned officers of the army and are under the same obligations of honor with regard to duels.

(i) **Commercial Academies:** For instance the Brewer Academy in Munich; but these do not seem to have the same rank as other academic institutions.

Technical education in Germany is maintained by the municipalities chiefly, or by private enterprise, both being occasionally assisted by the State and being always under State control. In the last number of the *German Watchmakers' Gazette*, for example, it is announced that a sum equal to \$2,000 has been granted to a watchmakers' school in Saxony.

No agriculture is taught in German primary and secondary schools. But in country public schools the art of planting and grafting trees and a few other simple operations are occasionally taken up, and in the lessons in chemistry in the high schools (*Real-schule*, *Real-gymnasium*, etc.) due attention is given to agricultural applications.

To sum up, in the words of President Loudon: "The technical system of Germany covers the whole field of industry and commerce. It distinguishes clearly between the general and the technical. No attempt is made to put a veneer of technical training on a defective general training. It distinguishes between the training of the director, the foreman, and the operative. In all grades it concentrates effort on the underlying principles of art and science and their application. The general result is a thoroughly trained body of workmen under scientific leadership."

MANUAL TRAINING.

The first stage in a good system of manual training, such as I saw in the best organized schools of the United States, is the kindergarten with its "gifts" and "occupations." Froebel, to whose doctrines we owe both the kindergarten and manual training, held that the human mind is developed fully and naturally only when the creative activities are brought under systematic and continuous training equally with the acquisitive powers. A scheme of education which concerns itself with the latter only is incomplete; it should provide exercises in the translation of thought into action, and of ideas into material representation. Manual training is, therefore, the logical and natural sequence of the kindergarten. The exercises connecting the kindergarten and manual training proper, that is, work with tools and machines on wood and iron, are of various kinds; but, from appearances, this phase of the subject, I should judge, has not yet been fully worked out. Paper and card-board work, bent iron work, and knife work, seem to be the commonest and the most suitable. Paper and card-board are cheap and easily manipulated, while bent iron lends itself to the cultivation of good taste in design and to freedom in individual expression. Knife-work (whittling, carving, etc.) is also cheap and simple, and, when followed out intelligently has been proved to produce excellent results. The course in wood-working with bench tools begins when the pupil is about eleven years of age, or as soon as he can handle them, and continues throughout the higher grades of the elementary schools until he is about fifteen. In the systems which one usually encounters, the work in wood consists of a series of exercises intended to relate it to the interests of the pupils. The models are simple, useful articles that have a place in his life, whether at play, at school, or at home. One sometimes finds, however, schemes in which this relation is not considered so much as the development of the principles that underlie the use of the tools. In the former systems, in particular, while the models stimulate to healthy, spontaneous self-activity, they are so devised as to cultivate also a sense of artistic form. The course with bench tools is sometimes finished in the primary school but is more usually continued in the High School, where it is followed by machine work—wood turning; the same objects being kept in view here also.

This work, in particular, develops delicacy of manipulation. In pattern making, the next stage, the pupil obtains a knowledge of the technique of the subject, and his manual training is continued on the same lines as in the previous exercises. Pattern making is followed by moulding, its natural sequence. Next come blacksmithing and forging. At this stage the pupil receives a special training in quickness and decision, and, as the models are of a decorative character, his aesthetic sense is also cultivated. The last course consists of filing and chipping iron with practice in the various tools of a fully equipped machine shop. Occasionally girls take the course in wood-work in the Grammar grades and (though rarely) in the first year of the High School; but usually in these grades parallel courses are provided for them in drawing and domestic science and art. The preceding is, of course, a mere outline. Further on I submit typical school courses which give definite details of what is attempted in both the primary and the secondary schools.

THE SWEDISH AND THE RUSSIAN SYSTEM.

As I have already said, no general system has yet been evolved between the kindergarten and the wood-work of the higher elementary grades. The same remark applies, in a measure, to the exercises in wood-work, owing, I think, not so much to the difficulty of the problem as to the fact that they came to this continent from two sources—Russia and Sweden. The main differences between these two systems in their original forms were that the Russian emphasized the value of the working drawing; the Swedish system, or, as it is called, Sloyd, neglected it, and that Sloyd required each piece of work to be a complete and useful article, whereas, the Russian attached no importance to this feature, being, in the earlier part of the course, only so many specimens of joinery. But both of these systems have been modified. Sloyd now emphasizes the working drawing while the Russian exercises have been simplified; and both have been adapted to American conditions. As defined by its advocates, Sloyd is tool work so arranged and employed as to stimulate and promote vigorous, intelligent self-activity, for a purpose which the learner recognizes as good. Its aim—and this should be the aim of any manual training system—is the harmonious development of the pupil during the formative age, giving him by manual exercises and the use of the creative instincts such general training as will fit him mentally, morally, and physically for any subsequent special training. The Russian system assumes that the forms of tools are the product of evolution, being the result of the best thought and the highest skill. Each tool has its functions and its correct methods of use. Again, each material has its characteristics, its limitations, its weak and its strong sides. These must all be brought out, contrasted and compared. And again construction consists chiefly in methods of combining pieces; hence joints, unions, and fittings constitute the chief elements. To a subordinate extent individual parts are to be shaped or modelled in accordance with the laws of simplicity, strength and beauty. Finally, the muscular strength of the boy's hand and arm, and his ability to be accurate, to be logical, and to be provident, must be duly considered.

Sloyd, however, has some advantages, especially for elementary classes. It makes less of the tool and more of the child. Its gymnastics are better and its exercises have a more human interest. The completed article appeals more strongly to the sympathy of the young than the more formal exercises of the Russian system. The latter are more suitable for High School pupils, especially if the course leads to an economic goal.

As a matter of fact, however, the character of the models I found in many places varied so much as the result of the teacher's individuality, that, although I often heard the terms "American Sloyd" and "American Russian" many of the systems are eclectic, consisting of what the teacher regarded as the best feature of each. This is, of course, as it should be.

THE ARGUMENT FOR MANUAL TRAINING.

Here it will be well to summarize the arguments for manual training as a necessary element in all education:

(1) Theoretically Manual Training is necessary. As Froebel has shown, education consists in developing all our faculties fully and naturally. To use the language of the Froebellian: "We must put the whole boy to school." It develops a large area of motor brain-energy which the old departments left untouched.

Our populations are fast becoming urbanized. The boy and the girl on the farm or in the village still get this training in a haphazard fashion, but the time has gone by even in Ontario when such home-training was general; for the bulk of our school population it is no longer available. Besides, every child enjoys creative work. Drawing, itself a limited kind of manual training, is the only other subject we have which recognizes the craving.

(2) Experience is in favor of Manual Training. Those who have to do with it all testify to its value:

(a) As an intellectual stimulus. Psychology tells us that, when we develop the motor activities, we stimulate the sensory and other brain areas. It comes, too, as a rest and agreeable change from the purely intellectual and is thus a help rather than a hindrance to the regular class work. Manual training helps any boy—the dull boy, in particular—in his other studies.

(b) As a social influence. It is itself labor, and its presence in a programme dignifies labor. The professional man is better for it, and it counteracts the present tendencies to despise manual labor—agriculture as well as the trades—and to crowd the professions. Schools in which book studies are the only or the chief ones make the pupils discontented with occupations in which bodily labor plays an important part, and incite them to leave their rural home for the city and the genteel occupations.

(c) As a moral agent. It cultivates habits of independence, originality, self-control, accuracy, observation, truthfulness, taste, and neatness. Children engaged in trying to give material expression to some form of usefulness and beauty, grow themselves into unconscious goodness. It seems also to hold many in school who would otherwise lose interest and drop out for all sorts of frivolous reasons.

(d) As a preparation for manual occupations. While it does not aim to prepare for the trades, it is the best practical preparation that can be given. Even the ability to read and apply the working drawing is itself of very great value. For the various minor duties of life, requiring manual skill, it is equally valuable. What more useful household accomplishment can there be than "handiness?"

(e) As a physical gymnastic. Exercises like sawing and planing develop the larger muscles, while the smaller ones are developed by the more delicate work of drawing, designing, and finishing. Sloyd, in particular, attaches much importance to a correct position at work.

MANUAL TRAINING IN THE UNITED STATES.

The history of the evolution of manual training is interesting and valuable, for it throws light on the present situation. A few epoch-marking events it is well to note here. When trade schools were established in Belgium, France, and Germany, it was found that, to secure satisfactory results, mathematics and science, and drawing in particular, must form part of the course of instruction. At first, the object was wholly economic; but it soon became evident to educationalists that training in the use of tools based on fundamental principles was of educational value. In 1858 a simple system of manual training was devised in Finland which recommended itself so highly that, eight years later, it was by law made obligatory in all the primary and normal schools of that country. It is well to note that the author of this system credits Froebel with the educational theory that underlies it. Sweden, which also claims to have had some form of manual training for over forty years, has given us the Sloyd system, already described. Of late years manual training for the young, often associated with technical education, has spread all over Europe, so that it is now found also, in some form or other, in the schools of Belgium, Germany, Austria, Switzerland, France, and England. In London, England, for example, it was introduced about 1886. The law, however, did not then permit the use of public funds for this purpose, and, in 1887, one of the Commercial Guilds gave a grant of \$5,000. So successful and so popular did the new training prove that, in 1890, it was placed by the Education Department on the school programme; power was given the school board to apply municipal funds; and grants were made for its maintenance by the Imperial Parliament. Last year, in the City of London alone there were over 150 centres at which the boys of the primary schools received instruction in wood, leather, and metal work. The late National Commission for Ireland, after a thorough investigation of the subject, has also, I may add,

reported very strongly in favor of the introduction of manual training into the national schools of that country.

The first suggestion in the United States came from a report of the director of the Imperial Technical School at St. Peterburg. This, the Russian system, was originally designed for students who entered the Technical School at 18 years of age. It is, however, held that the credit of adapting it to boys of fourteen or even younger belongs to the United States. The Russian educational exhibit at the Centennial Exhibition (1876) presented a full description of the system with a set of models to show how the tools were to be used. Pres. Rundle, of the Massachusetts Institute of Technology, was so impressed with the educational value of this exhibit, that, on his return from Philadelphia, he published a full report of it and established classes in tool instruction in his own college. As early as 1872 a shop for tool instruction and practice was equipped in Washington University, St. Louis, by C. M. Woodward, now director of the Manual Training School of the University, and, I believe, admittedly the protagonist of Manual Training on the American continent. In 1882 the subject was presented at the meetings of the American National Educational Association, and a committee thereof reported in its favor. In 1888, through the liberality of Mrs. Shaw, of Boston, Sloyd was introduced into the schools of that city, where the Russian system was also on trial. At first it was not very successful, but, as adapted by Mr. Gustav Larsson, now Principal of the Sloyd Training School, it has achieved remarkable success and is now the vogue in the grammar schools of Boston and many other cities, and its motive, indeed, has penetrated farther and deeper than the name itself. It has proved to be the leaven of the system. As originally introduced, both the motive and, consequently, the method of manual training were different from those of the present systems. The motive was technical. The earlier exercises were undertaken to give a skill of hand to be used in industry. The later ones give a skill of organism to be used in life. They are designed to train the mind through the hand. On this subject, for the last ten years, there has been no difference of opinion amongst modern educationalists. Any differences there are regard only its organization.

THE PRESENT SITUATION.

Advance sheets of the U.S. Bureau of Education (for which I am indebted to the courtesy of Dr. W. T. Harris, the U.S. Commissioner of Education) show that in 1899 manual training had been introduced into at least some of the leading cities of nearly all the States of the Union, and that the number of centres is rapidly increasing. Thus, for example, in 1890 there were 37 centres in cities of 8,000 and over; in 1894, 93; in 1896, 121; and in 1898 (the last year for which there is a record), 146. In this, as, indeed, in any other subject that makes for education the State of Massachusetts took from the first the leading place. In 1887 the first text book for beginners was published in Boston, and in 1894, chiefly, I believe, through the efforts of the Hon. Frank Hill, now secretary of the State Board of Education, and by general consent one of our foremost educationalists, a law was passed requiring every city and town of 20,000 and over to maintain manual training as part of its High School system, and in 1898 a clause was added requiring such communities to provide for this training in the primary schools also. While the State makes no distinction between boys and girls, the early provision was for boys only. Of late the claims of girls have been recognized as well in the provision that now exists for instruction in the arts that pertain to the household and the sciences that underlie them. The last report of the Massachusetts State Board (1898-1899) shows that not only have almost all the cities affected complied, often most generously, with the manual training law, but that no fewer than eighteen other cities and towns with populations of from 1000 to 1900 which are not affected by it, have voluntarily made provision.

I have so far dealt chiefly with one side of the new movement. The associated departments of sewing and cooking have not met with the obstacles that have stood in the way of manual training. Their introduction and maintenance cost less, and their utilitarian value commends itself more directly to the people. These subjects are very common in the grammar schools. Cooking I found oftener in the high schools than sewing.

All this has not been accomplished without much effort and a large expenditure of public money, especially in the high schools. Local sentiment, however, still varies from strong advocacy to antagonism, and, although in Massachusetts the general feeling has expressed itself in legislation as being favorable, the work of educating the people has still to go on even in this enlightened commonwealth. It is well to note here that, while the labor unions still look askance upon trade schools, they are invariably favorable to manual training. As an illustration I may record the fact that the last annual report of the Illinois bureau of labor statistics recommends the passage of a law favoring the compulsory establishment of Kindergartens in towns of 5,000 inhabitants or over. In cities of over 20,000 people it recommends manual training schools, and also suggests that provision be made for the training of Kindergarten and Manual Training teachers in all the State Normal Schools. A bill based on these recommendations and including domestic art has just been introduced into the legislatures. Still further, under date of January 24th, I find that the Building Trades Council and the Bricklayers' Labor Union of Chicago have petitioned the Board of Education to have their apprentices take technical training at the English High and Manual Training School of that city. This also is suggestive to Ontario.

HIGHER TECHNICAL INSTITUTIONS

Of the higher institutions for technical education in the United States, although I heard of a large number, being directly interested chiefly in primary and secondary education, I visited only the Armour Institute (Chicago), the Drexel Institute (Philadelphia), the Massachusetts Institute of Technology (Boston), the Pratt Institute (Brooklyn), and some of the departments of Applied Science of the universities in manual training centres. My object in visiting even these was as much to ascertain what estimate their authorities put upon manual training, as to see the highest phases of technical education in the United States. One very remarkable peculiarity about almost all the higher technical institutions that I visited or heard of, is the fact that they are either endowed by private benefactors and maintained in the same way or partly by fees, or they are wholly self-supporting. So far as my experience goes, the Massachusetts Institute of Technology is the only one which has received legislative aid. Of course, there are States, as, for example, Michigan, which support universities, and even in New York and the New England States, grants are made from the public funds for special educational purposes, as, for example, the grant to the Agricultural Department of Cornell; but I am now giving my own experience. The provision for higher technical education in the States includes also military schools, agricultural colleges, and university agricultural departments. As in the case of the other technical schools, some of these are supported wholly or partly by the State, and others by private benefactions. The only one I visited was the agricultural department of Cornell University. This I will discuss further on in connection with the question of agricultural teaching in our public and high schools.

The Massachusetts Institute of Technology is undoubtedly the largest and most complete school of the kind in the United States, and it is also one of the largest in the world. Some idea of its relative size and importance may be gathered from the fact that it has a staff of 175 professors and instructors, and that its current expenditure for maintenance alone in 1899 was \$367,500; whereas there are only 14 on the staff of our School of Practical Science and its annual expenditure is only \$35,000. I should add, however, that, on the average, it costs but \$175 to educate one of our students, whereas it costs in the Boston Institute \$314. The curriculum embraces almost every science which finds application in the arts. A characteristic and very important feature of all the courses and one wanting in most other similar institutions, is that a by no means inconsiderable amount of general literary culture is required in addition from every candidate for its degree. Recognizing the fact that few students of technical schools are university or college graduates, and that the aim of the institute should be first of all to send out broadly trained men, the faculty has always insisted that liberal studies should be incorporated in every department of the curriculum. With Prof. Schwamb, to whom with President Pritchell I am indebted for much valuable information, I visited the "shops," or mechanical laboratories, which are considered an important adjunct of the other laboratories. These consist of a fully equipped shop for carpentry, wood turning and iron making, foundry for iron and brass, a forge-shop and power-hammer, and a

machine shop with about 40 lathes—an establishment corresponding, in fact, to the mechanical laboratories of the best manual training high schools.

The Armour, Drexel, and Pratt Institutes of Technology, named after the gentlemen to whose munificence they owe their foundation and chief support, have departments corresponding to some of those of the Boston Institute, but they have preparatory and other schools affiliated and are wider and more popular in the range and character of their courses. The words of the year book of the Drexel Institute are applicable to all. The chief object of these institutions is "the extension and improvement of industrial education as a means of opening better and wider avenues of employment to young men and women," and "providing means of culture for the public by evening classes, free lectures and concerts, the library and the museum." The buildings and the equipment of the Drexel and Pratt Institutes are very fine—especially those of the former, which, being of more recent establishment, represent the best features of similar older institutions. The Armour Institute is not so well equipped as either of the others, nor are its courses so comprehensive; and, notwithstanding the long continued generosity of the late founder, it is now much cramped for room. The Drexel and Pratt Institutes present more ambitious programmes, and the range is extraordinarily large, embracing almost every existing phase of education—Fine and Applied Art, Mechanic Arts, Electrical Engineering, Technical courses, Science courses, Commerce and Finance, Domestic Science and Art, Library Schools (to prepare librarians), Language and Literature, Physical Culture, free lectures and entertainments, organ recitals and concerts, choral classes, with very fine libraries and museums. The Armour and Pratt Institutes have also preparatory high schools attached, and the latter has a trade school with evening classes in carpentry, machine work, plumbing, house-painting, sign-painting and fresco-painting. These institutions are attended by thousands of students of all classes, and seem to me to be the natural product of a prosperous, liberal, and progressive people.

The authorities of these three institutes all speak in the highest terms of the value of Manual Training. Dr. MacAllister (of the Drexel Institute), in particular, was one of its first and most strenuous advocates, even maintaining that it should be continued to the end of the high school course as part of a liberal education. His contention, in which the other educationalists I met concur, is that there cannot be full development of the motor centres of the brain without a systematic training in metal work.

As will be seen later, the manual training high schools offer, in addition to general and other courses, what they call a preparatory course for the higher technical schools. Such courses may be projected before long in Ontario, and I thought it wise to ascertain the experience of those who had had an opportunity of testing the results. All of these higher schools, I should explain, have "shops" for wood and metal work, duplicating, in fact, the course of the manual training high schools. The only exception I know of in the United States is the department of Applied Science in Yale University. President Hadley has been good enough to explain to me that Yale has found it necessary to avoid the use of shopwork in the department of mechanical engineering; not because the university undervalues manual training, but because, in the stage of specialized education preliminary to actual professional life, the young men liked shopwork so much that they tended to overrate its value in proportion to other things. He has received testimonials from the best engineers all over the country that the effect of this practice on the part of Yale had been good; that the young men who came to them trained in college shops not only had a great deal to unlearn, but had false conceptions which stood in their way. Here it may be well to note that the position of the president of Yale in this matter is not taken by Principal Galbraith of our School of Practical Science, although his reasons for not desiring the "shops" are, as he stated in his address last December, not the same as those given by President Hadley.

Opinions of University and other Authorities.

On the question of the relation of the manual training schools in the United States to the higher technical institutions, I am able to submit the following opinions:

From the Sec. of the Mass. Inst. of Technology, Boston.

"I am inclined to answer your question as to preparation in manual training as follows: In the first place, a manual training school attracts and holds a considerable portion of the students who would have abandoned the ordinary academic high school course to go into practical work without completing

preparation for admission to the institute. The Mechanic Arts High School in Boston thus sends us at present more applicants than any other school, while the number coming from the English High School has fallen off very considerably. These boys include a large proportion from the industrial and even the poorer classes, increasing incidentally the demand for scholarship aid. In the second place, the value of their preparation for our work depends much on the quality of the boy, and much, of course, on the quality of the teaching, apart from the abstract merits of the kind of education itself. The boys who come to us from the manual training schools are to some extent those whose particular mechanical instincts were at the outset relatively strong. These boys, when they come to us, are therefore likely to be one-sided, and to show weakness, or even to fail in our literary requirements, which are considerable during the first three years. In the third place, the direct anticipation of our drawing and shopwork in the manual training school is an advantage of varying importance. The work can rarely be so well done as by our own students, in the shorter time which the latter give to it. The drawing is required in all our courses, but shopwork is required only in particular ones in varying amounts.

"On the whole, I am disposed to advise that a boy should choose between the manual training and other secondary schools on other grounds than their supposed merits as preparatory schools, and to consider them in this respect as of about equal strength, assuming, of course, that the academic preparatory course will include some study of natural and physical science, without which any secondary course seems to me to be defective.

"It is doubtless an advantage from our point of view that our students should have had training in drawing and shopwork at an early age. It does not follow that in a particular case this training may have been the best.

"Professor Schwamb suggests that I add that the shopwork of our students can be done in less time and more thoroughly, partly because the men are more mature, but mainly because of their training in exact work in other laboratories of the institute. He adds that previous training in shopwork and drawing is of particular advantage to students in certain other engineering courses, for example, civil engineering, which do not include it in their actual requirements."

From President Hadley, of Yale :

"We have not as yet been able so to arrange our examinations that manual training can be made a part of them; and as we admit only on examination, and not on certificate, this has prevented us from incorporating it in the requirements for admission.

"I may, however, add that the work done by those who have had courses in good manual training schools has been of such high character that we are most favorably impressed with its value in secondary education."

From the Sec. of the Faculty of Mechanical Engineering, Cornell :

"We do not directly recognize manual training in our matriculation. After the students have entered upon the work of the course, if they are able to show the necessary skill we allow them to make a certain number of exercises standing as an examination, and these, if up to the standard, may be accepted in place of the term's work. In this manner, if the student has gained sufficient training at the high school, he may be able to make it count in the university. Our experience has been, however, so far, that comparatively few students with only high school manual training are able to pass up very much of the work. Neither do we find that at the end of the four years' course the man who has had high school manual training is likely to be in advance of his fellow who has not had such training. In other words, we find that the condition of the student at the end of his course will depend more upon the manner in which he has utilized the advantages which we provide than upon whether or not he has had previous training in the high school. I think that I may fairly say that for purposes of university preparation we do not place any great value upon high school manual training. We are quite content that the student should come without such training, and believe that for our purposes the time might be better spent in thorough training in the elementary subjects required for entrance. It does not follow that high school manual training has no value. It is a fact, of course, that but a small percentage of high school students finally reach the university and take a full university course. For the great majority who go from the high school into the world it may well be that they would find a course of manual training of great value; but I am convinced that if manual training in the high school has to be justified it must be by reason of its value for this class of students rather than for the one who goes on to take a university technical course."

Harvard University recognizes the Manual Training System in its requirements for admission to its department of Applied Science. This concession is, no doubt, due Pres. Eliot's appreciation of the subject, an appreciation which he has publicly proclaimed. He is absent from the country at present, and I was unable to obtain his views. To some of the Harvard authorities, the chief value of manual training, I understand, seems to be in the education of young men who need to have their interest stimulated by manual exercises. Such training is also held to have an important place in providing the large number of young men who are employed in the smaller trades to be found about every large city. It is also believed that the system has not been long enough in operation at Harvard to justify any general conclusion in regard to its desirability as a preparation for college work.

Evidently the relation of the Manual Training School to the higher Technical Institutes has not yet been worked out in the United States, and the situation there would not justify us in making any immediate provision for preparatory courses in Manual Training for our University faculties of Applied Science.

MANUAL TRAINING HIGH SCHOOLS.

It would be impossible to give any definite general statement of the organization of the Manual Training High Schools. Although having the same general character, they differ according to the individualism of the cities and towns in which they are situated. The most important I saw are those of Boston (Mass.), Brooklyn (N. Y.), Cambridge (Mass.), Chicago (Ill.), New Haven (Conn.), Philadelphia (Penn.), Providence (R. I.), and Springfield (Mass.). All of them have separate buildings and are well equipped and well manned. Co-ordinate with them in their localities are English and Latin High Schools, also in separate buildings; the number of such High Schools in a city varying from one in Springfield to about a dozen each in Boston and Chicago. I may say in passing that an idea of the attitude of the American people towards a secondary education may be got from the fact that, in Philadelphia, the Boys' High School alone cost \$1,300,000, and in Springfield, a city with a population of only 60,000, its new High School—a most magnificent edifice—cost about \$750,000. The cost of the buildings and the equipment of the Manual Training High Schools I visited runs from about \$25,000 to nearly \$300,000 (the Boston Mechanic Arts High School). All of the High Schools—English, Latin, and Manual Training—are free to residents, as, indeed, are all the Public Schools of the United States that I saw or heard of. The Manual Training Schools enumerated above are now all owned and managed by the local Boards of Education. The Rindge Manual Training School of Cambridge was founded in 1888 and maintained until 1899 by Mr. F. H. Ringe, a wealthy merchant of that city. In the latter year it was unconditionally handed over to the Board of Education and is now a part of the public school system of Cambridge; the fine new English and Latin High Schools having been built on adjacent squares. The Boardman Manual Training High School of New Haven is a gift of the widow of the Hon. W. W. Boardman, who donated \$70,000 for a building, the City Board of Education furnishing the land and the equipment and defraying the current expenses. All the others I visited had been established by the municipalities in which they are situated; all, without any exception, are in a flourishing condition; and most are in pressing need of more accommodations.

All of the above mentioned Manual Training Schools are real High Schools, with the same entrance requirements as the English and Latin High Schools, but differing from them in substituting courses in Manual Training for some of their academic work in the languages. All have courses in English, Mathematics, and Science; a few have Latin; all have French; most German; and one Spanish. Five of them—those in Boston, Cambridge, Chicago, Philadelphia, and Springfield—are for boys only; the Domestic Art and Science for girls being in one or two of these cities provided in the English High Schools. All of them offer what are called "General Courses"; that is, courses (with Manual Training) suitable for those who want only a general education, as well as preparatory courses for the different Higher Schools of Technology. The Schools of Boston and Springfield are known as Mechanic Art Schools, because they have specialized in courses developing the principles of the Mechanic Arts, and the same name might also be applied with equal suitability to the Schools in Cambridge, Chicago, and Philadelphia. The Manual Training Schools of Brooklyn, Providence, and New Haven provide courses for girls in Art and in Domestic Science and Art, while the Brooklyn and Chicago Schools provide Commercial Courses also. In Philadelphia there is a special commercial High School attended by about 1,000 girls, but usually this branch of instruction is provided for in the English High Schools. In Boston, Brooklyn (except for commercial students), Cambridge, New Haven, Providence, and Springfield, the courses are of four years; and in the others, of three, except in Philadelphia (which has two public Manual Training Schools in different parts of the city), where there is a post graduate course in the Languages, History, Mathematics, and Science.

Of High Schools which have a manual training department in addition to the usual academic ones, I may mention in particular those at Albany (N. Y.), Brookline (Mass.), and Lynn (Mass.). The accommodation at Albany consists of some rooms in the basement, and the equipment is by no means elaborate. The courses are in woodwork only, and are taken as an option by both girls and boys. Here there are two teachers, a man for the boys and a woman for the girls. The teacher of the girls had taken a summer course at the training school in Näs (Sweden), and was as enthusiastic an advocate

of Americanized Sloyd as the teacher of the boys' work was of Americanized Russian. In the last year of the girls' course, clay modelling and carving in wood are substituted for the boys' machine work in wood. The wood-carving and joinery of the girls, I may say, was exceedingly good. The boys of the Brookline High School take under a special teacher the work in wood and iron in the building of the William T. Lincoln Grammar School. The course here is a good one and was spoken of in high terms of commendation by the superintendent of the mechanical shops in the Massachusetts Institute of Technology. In Lynn, near Boston (population 60,000), the work in both wood and iron is taken in the old High School building, adjacent to the new English and Latin Schools (which cost \$280,000). The equipment is of the best, and the staff (of four) is the largest I saw in any of the manual training departments of an English High School. The course in shop-work is a three years' one:—Joinery (28 weeks), wood turning (12 weeks), for the first year; wood turning and pattern making (23 weeks) cabinet making (5 weeks), and forging (12 weeks), for the second year; and tool making, tempering, compounding of metals and alloys, moulding and casting (16 weeks), and chipping and filing and machine work (24 weeks), for the third year. Drawing, of course, is here as elsewhere, closely correlated with the shop work. Here I was especially struck with the attention given to such parts of forestry as could be taken up in connection with the course in wood. A peculiarity of the school which is suggestive to us in Ontario is that the teachers of manual training take a share in the academic work in the High School proper in English and Mathematics. A course in Domestic Science is provided for the 8th Grammar School girls of Lynn in two different centres, but no such provision exists in the High Schools.

As I have already said, these schools are not regarded as trade schools either by their staffs or by the public, and I seldom heard the education they give described as technical. Both terms seem to be studiously avoided in this connection. It is always held that the schools have as much claim to be considered educational as have the English or the Latin High Schools. They specialize in manual training; the English and the Latin schools, in English and the languages. Indeed, it is maintained that the Manual Training Schools are more important educationally than are the other two classes of High Schools, for they educate the whole nature, the creative as well as the acquisitive powers. It is not, however, denied that in the later years of the work, the courses are a direct preparation for the industrial pursuits; but it is pointed out that the courses in the other schools are a direct preparation for the professions, and that the industrial arts have at least an equal right to consideration. Some of the Manual Training Schools as, for example, those in Providence and New Haven, may fairly be described as lower grade Technical Schools; they emphasize the industrial aspect more than some of the others. Such schools supply a demand which the decline of the apprentice system and the marvellous progress of industry have of late years developed in the United States for technical training of a grade below that of the Schools of Technology. They prepare young men whose funds and time are limited, for positions as designers, draughtsmen, and superior workmen, many of whom eventually become foremen and managers; and, with the education they give, a man of ability may rise to any position in industrial life: not all a man's education is obtained at school or at college. It is, I should think, exceedingly probable that the Manual Training High School idea will develop more and more in this direction especially in the smaller cities, where limited financial support will prevent a more complete sub-division of educational labor.

An examination of the records of seven hundred or more of one of these institutions shows that 70 per cent. of its former students are engaged in pursuits in which what is required is a high order of intelligence with skill of hand in dealing with force and matter. Already a large number occupy positions of trust and responsibility as superintendents, managers, and foremen. That such schools also foster a desire for higher learning is shown by the fact that 20 per cent. of the graduates become students in the colleges, universities, and higher technical schools. On another point, emphasis was laid by all the principals I saw; many of the students go into kindred commercial occupations (hardware stores, etc.), or become dentists, doctors or lawyers. These, I am told, bear witness to the great advantage from hand and eye training and a general acquaintance with industrial pursuits. The resulting sympathy with and respect for labor are also not the least of the recommendations of such courses for those whose occupations are of a more literary character.

The flexibility of the American system—its adaptability to local needs—is seen everywhere. In Springfield, for example, I found, in connection with the Mechanic Arts High School, evening trades classes in tool making and plumbing. These classes were at first very successful; but, owing to the withdrawal of the city appropriation, a fee had to be charged and the attendance at once fell off. At present only the class in plumbing survives. It is also significant of the liberality and intelligence of the American workmen in Springfield, which is a distinctively manufacturing city, that its Plumbers' Association have voluntarily agreed, in employing help, to give the preference to members of the evening classes in plumbing. Speaking of these classes in his report for 1899, Mr. Thos. M. Balliet, the city superintendent, uses words which show clearly the direction in which the manual training idea is drifting in some parts of the United States:

"The success of these classes makes it clear that if provision were made for the teaching of several trades in the day high school, in the Manual Training course, it would meet with wide popular approval; and it would provide a kind of high school education for boys ordinarily are obliged to go to work when they have completed the grammar school course and are thus deprived entirely of a high school education. The present equipment and teaching force, both of which have been increased the present month to provide for the needs of the school as now organized, would also be sufficient to teach machine shop practice, pattern making, and joinery as trades. The adding of other trades would, at this time involve more or less additional expense."

MANUAL TRAINING HIGH SCHOOL COURSES.

I give below the courses of study in the Boston and Providence schools as being two characteristic types of the Manual Training High School. The Boston school (for boys only) has specialized in the Mechanic Arts, and the Providence one (for both girls and boys) is of a more popular character, each being organized to meet the peculiar requirements of its district.

MECHANIC ARTS HIGH SCHOOL, BOSTON.

COURSE OF STUDY.

This course of study is not to be regarded as a permanent one, but simply a trial course which is subject to change at any time. At first the course was a three years' one, but a fourth year has been added.

FIRST YEAR.

Academic.	Hours per week.	Months.	Mechanic Arts.	Hours per week.	Months.
Algebra	5	10	Drawing	5	10
General History (alternate days)	2½	10	Carpentering	10	7
English (alternate days)	2½	10	Wood-carving	10	3

SECOND YEAR.

Algebra (alternate days)	2½	10	Drawing (alternate days)	2½	10
Plane Geometry	5	10	Wood-turning, pattern-making	10	5
History of the United States, Civil Government (alternate days)	2½	10	Forging	10	5
English	2½	10			
French	2½	10			

THIRD YEAR.

Solid Geometry	5	5	Drawing (alternate days)	2½	10
Plane Trigonometry	5	5	Machinist's work with hand tools mainly	10	3
Physics (alternate days)	2½	10	With machine-tools mainly	10	7
English (alternate days)	2½	10			
French	5	10			

FOURTH YEAR.

Trigonometry: applications to physics, surveying, and navigation.....	2½	10	Drawing.....	2½	10
Physics: laboratory work.....	2½	10	Machine Shop Practice and projects involving the shop work of preceding years.....	10	10
Chemistry.....	5	10			
Advanced Algebra.....	2½	10			
Plane Geometry.....	5	10			
History of the United States.....	2½	10			
English.....	2½	10			
French.....	5	10			
German.....	5	10			

The subjects specified for the fourth year, with the exception of English, are optional. Candidates for diplomas are required to take throughout the year the equivalent of 15 hours per week in the academic department, and 12½ hours in the department of mechanic arts, but the work of either department may be substituted for equivalent work in the other. A prepared recitation is counted as the equivalent of two hours of laboratory work, shop work, or drawing.

The omission or choice of a study must be subject to the approval of the principal.

MECHANIC ARTS DEPARTMENT.

For each of the mechanical departments a carefully graded series of models has been chosen, the construction of which illustrates every fundamental principle or process. The models in the primary series are made by all the members of a class. Running parallel with the primary series is a set of supplementary models that involve the application of principles already learned to more difficult work. The supplementary exercises are undertaken only by those who are capable of doing more than the regular work of the class.

The aim of the course in drawing is to teach the proper use of the pencil and drawing instruments, and to give facility in the expression of ideas of form by the various methods of freehand and mechanical representation. About two-fifths of the time assigned to drawing each year is devoted to freehand work, and the remainder to mechanical drawing. In addition to the carefully executed plates much attention is given to the rapid production of drawings of models sufficiently accurate for many useful purposes, but by no means finished work. Such sketches frequently furnish the data for complete working drawings.

DRAWING.

FIRST YEAR.

Freehand lettering. Freehand sketching: views of type solids and carpentry models. Elementary working drawings of carpentry models to scale. Elementary Geometric problems. Geometric designs. Orthographic projection of simple solids: cutting planes, sections, and developments. Designs of supplementary shop exercises: book-rack, tool-box, small tables. Freehand appearance drawings of types, singly and in groups. Freehand historic ornament.

SECOND YEAR.

Orthographic projections, intersections, and developments. Applications of line shading and tinting. Freehand and instrumental working drawings of shop exercises. Freehand elementary design. Original designs of goblets, balustrades, and vase forms, to be executed in the turning course. Original designs for wrought-iron work: grille, andirons, fire set, to be executed in the forge shop. Isometric drawing of details of building construction: framing. Application of geometric problems to the construction and decoration of openings: arches, windows. Freehand appearance drawing: casts, historic ornament, furniture, parts of room, machinery. Geometric problems: ellipse, helix, spirals. Machine details: bolts, nuts, screw threads.

THIRD YEAR.

Projection of shadows. Geometric problems: cycloid, epicycloid, hypocycloid, involute. Mechanical movements: cams, gears, eccentrics, pulleys, belting. Details of machinery: lathe, marine engine, dynamo. Elementary architectural design and decoration: plans, elevations, sections. Light and shade, orders of architecture from casts, pen and ink rendering. Tracings and blue prints.

CARPENTRY AND WOOD-CARVING.

The details of the manual training department are important at this juncture, more especially as they have been well worked out and have been the model on which the courses of many similar institutions have been based:

1. Measuring and lining exercises.

On a rough board with a two-foot rule and pencil; chalk line, try square, and pencil; bevel and pencil. On a smooth piece with marking gage; try square and knife; "bevel" and knife. On a smooth piece with compasses, straight edge, and knife, making r. prot. "bevel" and knife. On a smooth piece with compasses, straight edge, and knife, making r. prot. "bevel" and knife.

2. Sawing exercises, preparation of stock for models.

Rip and cross-cut sawing to pencil lines; rough board resting horizontally on benches. Rip sawing in gage lines; piece held upright in the vise. Back sawing, square ends and sides of pieces; the pieces resting on bench hook. Sawing kerfs in mitre box. Curve sawing with hand turning and power jig-saw.

3. Sharpening exercises.

Straight and curved edge-tools on grindstones. Sharpening or bevelling 2x6x4-inch white holly on prepared sandpaper block. Whetting straight and curved edge-tools on oilstones. Applications: plane iron, chisel, gouge, carving tools, cabinet scraper.

4. Planing exercises.

Making plane surfaces: jointing edges and planing to gage lines. Block planing, square ends with pieces held in vise. Oblique edge and end planing. Rabbeting, beading, moulding. Applications: square prism, octagonal prism, hexagonal prism, winding sticks, picture frame, typical joints.

5. Nailing exercises.

Nailing square joints, using cut and wire nails. Toe nailing. Nailing mitre joints. Applications: nail box, screw box, bracket, picture frame, splice joints.

6. Boring exercises.

Perpendicular boring with auger bits across the grain entirely given depth, both across and in the direction of the grain. Boring

Perpendicular, boring to a trills, and c...

7. Chiselling exercises.

Top and bottoms of grooves across and in direction of grain. Curved surfaces. Applications: sliding gage, mortise and tenon, dovetail, handles.

surf. ... in ... of boxes.

glue ... octagonal tool

8. Gluing exercises.

Rubbed joints. Clamped joints. Dowelled and keyed joints. Applications: winding sticks, T squares, drawing boards, picture frames, hopper joints.

9. Form work.

Plotting curves from straight lines on plane surface freehand. Plotting curves on surfaces. Applications: coat hanger, bread trencher, hammer handle, octagonal tool.

10. Wood-carving exercises.

Flat and oblique surfaces cut with firmer and skew chisels. Beads and flutes cut with firmer and skew chisels. Cutting straight and curved lines with veining and cutting the ... making with gouges. Geometric designs cut in low relief on flat surfaces. Carving ... relief on both plane and curved surfaces. Applications: pencil tray, book rack, picture frames, ... box, ... rack, flower-pot stands.

WOOD-TURNING AND PATTERN-MAKING

I. Turning between centres—white pine.

1. Cylindrical surfaces, gouge and chisels. Cylinder: gouge. Cylinder: Double stepped cylinder.

2. Convex curves; chisels. Beads of different sizes. Beads, conical and ... surfaces.

3. Concave curves; gouges. Curves of long radii. Curves of short radii.

4. Combinations and applications of 1, 2, and 3. Convex curves, concave ... and cylindrical ... surfaces, leaving a square base. Convex, concave and compound ... cylinders, ...

II. Chuck turning.

1. Capital of column. Grain perpendicular to axis: cylindrical, conical, and curved surfaces ... to pine.

2. Powder box—cherry.

3. Napkin ring—walnut.

4. Goblet—hardwood, glued up.

SUPPLEMENTARY WORK.

Bench stops—hickory. Gouge, chisel, file, and screw-driver handles. Mallet—maple. Stocking ball—cherry. Rolling pin—maple. Gavel—oak. Dumb bells—maple or cherry. Indian clubs—maple. Balustrade—pine. Micrometer caliper holder—cherry. Towel ring—cherry. Boxes—cherry, maple. Napkin rings—walnut. Cups and goblets—hardwoods glued up. Spheres—cherry. Vase forms—pine.

III. Pattern making.

Draft, allowance for shrinkage; gear blank. Green sand core, allowance for finish; collar. Split pattern, dry sand core; hollow chuck. Applications of 1, 2, and 3; stand for tool rest.

SUPPLEMENTARY.

Paper weight, blank for taper socket. Collar, face plate. Hanger box, screw chuck. Tool rest, hand wheel, eccentric.

FORGING.

1. Description and operation of forge, and care of fire.
2. Names, characteristics, and uses of tools.
3. Typical processes: drawing, shouldering, forming, bending, upsetting, twisting, scarfing, welding, punching, hardening, and tempering.
4. Sources and properties of materials: common iron, Norway iron, Bessemer steel, open-hearth steel, and crucible steel.
5. Applications: butt ring, hook and staple, bolt, nut, timber hanger, bracket, eye bolt and ring, chain and hook, tong, centre punch, cold chisel, cape chisel, spring, lathe tools, square reamer.

MACHINE-SHOP PRACTICE.

I. BENCH WORK.

1. Chipping and filing of plain surfaces—cast iron.
Use of measuring and marking tools. Chipping narrow surfaces with flat chisel. Chipping broad surfaces with cape and flat chisel. Filing flat surfaces and testing with straight edge.
2. Drilling cast iron—finished model No. 1.
Accurate location of holes. Action of flat drill.
3. Chipping and filing of curved surfaces, and plain surfaces at right angles—cast iron.
Testing with a try square. Filing a convex surface. Chamfering curved and straight edges. Draw filing, and polishing with emery cloth.
4. A sliding fit—cast iron.
Production of parallel surfaces, testing with calipers. Fitting piece to slide in groove of fixed dimension.
5. Drilling and chipping—wrought iron.
Use of twist drill. Key seat chipping. Use of round-nose chisel. Use of hack saw. Chipping in corners.
6. Surface plate—cast iron, brass handles.
Planing a flat surface. Drilling and tapping. Hand turning in brass. Use of die. Scraping.
7. Surface gage—cast iron, malleable iron, machinery steel, cast steel.
Extension of processes of chipping, filing, and fitting, with introduction of new forms of tools. Hand-lathe work on steel. Tempering. Assembling finished parts.
8. Paper-weight,—composition metal.
Hand turning. Polishing and lacquering.
9. A set of lathe tools.
Shaping faces that form a cutting edge.
Supplementary exercises. Calipers, hammer, binding posts, brass ornaments, skate runners, and projects of a simple nature. Simple machine tool work on stock for class exercises.

II. MACHINE TOOL WORK.

10. Stepped cylinder,—wrought iron.
Centering. Squaring ends with side tool. Use of parting tool. Roughing with diamond point. Finishing surfaces,—dry, with soda water, and with emery cloth and oil.
11. Perfect cylinder,—cast iron.
Truth of live centre. Alignment of the dead centre: geometrical relation of the axis of revolution to the tool path.
12. Stepped cylinder,—finished model No. 11.
Determination of size:—With spring calipers set by steel rule. With spring calipers set by standard reference gauge. With micrometer calipers. With standard caliper gauge.
13. Taper sleeve and plug.
Use of lathe chuck. Use of chuck drill. Production of conical surface by compound rest. Production of conical surface by adjusting the dead centre.
14. Right and left hand screw.
Principles of screw cutting. Knurling and finishing.
15. Elements of machines that involve the use of chucking reamers, hand reamers, mandrels, boring bar, back rest, face plate, and taper attachment.
Examples: Pulleys, gear wheels, eccentrics, lathe spindles, steam-engine cylinder, lathe centres. These pieces may call also for work upon the planer, shaper, milling machine, or grinding machine.

III. CONSTRUCTION OF MACHINERY.

A hand lathe, engine, dynamo, or other machine or piece of apparatus is built by a group of pupils each pupil making and assembling several closely related parts.

MANUAL TRAINING HIGH SCHOOL, PROVIDENCE.

COURSE OF STUDY.

The small figures after the studies designate the number of exercises a week; the figures in parentheses, the number of weeks the studies are taken.

A period means 45 minutes. All periods in manual work are double periods.

School sessions from 9 a.m. to 3 p.m., with a half hour recess for lunch, which is served in the building.

FIRST YEAR.

I. ACADEMIC WORK:

Literature.

Elementary Rhetoric and English Composition⁴ (40). American Literature and Authors¹ (40).

Mathematics.

Algebra⁴ (40). Arithmetic¹ (40).

Science.

Physiography⁵ (20). Bookkeeping alternating with Physics⁵ (20).

II. MANUAL AND ART WORK:

Drawing⁵ (40).

Lettering and Geometrical Figures. Working Drawings in connection with Carpentry. Geometrical Figures. Drawing from Models—Freehand. Drawing from Casts—Historic Ornament. Elementary Designs—Plant Forms.

For Boys.

Carpentry and Joinery⁵ (20). Smithing and ornamental iron work⁵ (20).

For Girls.

Sewing⁵ (20). Carpentry⁵ (15). Emergency Notes. Physiology and First Aid to Injured⁵ (5).

SECOND YEAR.

I. ACADEMIC WORK:

Literature.

Ancient and Mediaeval History^{2½} (20). English Classics and Composition^{2½} (20). English History fundamental to American Institutions^{2½} (20). German^{2½} (20).

Mathematics.

Geometry⁵ (40).

Science.

Physics alternating with Civil Government⁵ (20). Physics⁵ (20). General Chemistry—Girl's course preparatory to cooking⁵ (20).

II. MANUAL AND ART WORK:

Drawing⁵ (40)—For Boys.

Designs in Wrought Iron. Geometrical Figures. Orthographic Projection. Elementary Machine Drawing—Freehand. Designs for Wood Turning—Classic Forms.

For Girls.

Historic Ornament for Woodcarving Designs. Values in Light and Shade. Pen and Ink Rendering. Charcoal—From Casts and Objects.

For Boys.

Clay Modelling and Woodcarving⁵ (20). Smithing—Toolmaking and ornamental wrought iron⁵ (20).

For Girls.

Clay Modelling and Woodcarving⁵ (20). Science of Cooking and Cleaning⁵ (20).

I. ACADEMIC WORK :

THIRD YEAR.

Literature.(a) German³ (40). (b) English Literature and Composition² (40).*Mathematics.*Algebra completed⁵ (10). Plane and Solid Geometry⁵ (30). Mensuration.*Science.*Physics of Heat, Light and Electricity⁵ (20). General Chemistry⁵ (20). Structural Botany⁵ (20).

NOTE. Girls take Physics for first half and Botany second half year.

II. MANUAL AND ART WORK :

*Drawing⁵ (40).*Building and Construction⁵ (20). Mechanical Drawing or Architecture⁵ (20).

NOTE. At the middle of the third year a choice is offered between a course of Mechanical Drawing or Architecture, extending through the remainder of the student's course.

*For Boys.*Wood Turning and Patternmaking⁵ (20). Molding and Foundry Work⁵ (10). Vise Work⁵ (10).*For Girls.*Chemistry of Food and Science of Nutrition⁵ (20). Millinery and preliminary work in Dressmaking ; water colors, drawing in connection with millinery and designs for embroidery⁵ (20).

FOURTH YEAR.

I. ACADEMIC WORK :

*Literature.*German⁵ (40). English Literature² (40).*Mathematics.*Review Algebra and Geometry⁵ (10). Trigonometry and Surveying⁵ (10). Field Work in Surveying² (20).*Science.*Analytical Chemistry⁵ (20). Electrical Engineering⁵ (10). Photographic Science and Engraving⁵ (10)

II. MANUAL AND ART WORK :

For Boys.

Mechanical Drawing or Architecture.

For Girls.

Charcoal Drawing from the Antique. Theory of color. Pen and Ink work—Copies and from life, for expression of taste and form in designs, for Dressmaking. Designs for Book Covers and Illustrations.

*For Boys.*Machine Shop Practice⁵ (40).
Steam Engineering² (6).*For Girls.*Household Sanitation ; Study of Yeasts, Moulds, and lower forms of life ; Home Nursing⁵ (20).
Dressmaking⁵ (20). Psychology in place of Electrical and Civil Engineering.

In both Boston and Providence, the commercial courses which we find in the Brooklyn and Chicago Manual Training Schools, are provided in the English High Schools.

WOODSTOCK (ONT.) COLLEGE.

So far I have dealt with the manual training schools of the United States. I visited also the college at Woodstock, Ont., the pioneer in 1889 of manual training in Canada. Here the department is optional, and a fee of \$9 00 a year is charged to cover the cost of material. The object of the course, from the college standpoint, is purely educational—to develop the boys' practical nature ; the boys take it because they like it and because they find it will be useful to them in after life. No attempt, however, is made to produce articles for the market or to teach a trade. The department is in charge of Mr. D. K. Clarke, B.A., who is also modern Languages Master and who acquired his knowledge of manual training after he had graduated—both facts suggestive to the Ontario High School Master. The course given in outline below, is taken daily during the regular school

hours, the periods for the first and second years being each three-quarters of an hour, and for the third an hour :

FIRST YEAR. Drawing, Freehand, Practical Geometry and Perspective, drawing to scale all shop exercises, Carpentering, Woodturning, Construction.

SECOND YEAR. Drawing, Object Drawing, Mechanical and Industrial Design—Joining and Turning in hard and built-up woods, Pattern-making, Wood-carving.

THIRD YEAR. Mechanical and Architectural working drawings, Blacksmithing, Forging, Welding, Tempering, Brazing.

Machine Work, Chipping, Scraping, Filing, Planing, Milling, and Lathe Work.

Mr. Clark tells me that the time devoted to the subject in no wise impairs the character of the students' other work, but that, on the contrary, they take a higher average than the rest of the school. It is found also that careless boys often become interested in the subject and that this interest produces a general improvement in their other class work, and, what is more important still, in their conduct. This conclusion is supported, I find, by the superintendents of the United States Industrial Schools, who testify to the beneficial effect produced by manual training in the moral regeneration of the criminal and his interest and advancement in other work. All this we might conclude *a priori* from Psychological laws, but the average citizen is more impressed by the evidence of their operation. Mr. Clark also adds—and this too is significant—that the students who take manual training usually remain at school for a longer period than the others. The average citizen, again, looks with suspicion on the testimony of the specialist as to the value of his subject. Mr. Clark's opinion is supported by others who are familiar with the evidence. The Principal and the rest of the faculty have always been unanimous in their appreciation of the value of manual training in their educational work, and the governors of the school have shown their appreciation in the most practical way, by spending about \$10,000 in erecting and equipping a special building. Most of the evidence we have on this subject is foreign. We have here the evidence of a staff which has tested manual training for over ten years in our own Province.

MANUAL TRAINING IN THE GRAMMAR SCHOOLS.

From various causes, few of the cities I visited have even a fairly complete system of manual training; that is, a system correlated, on the one hand, to the kindergarten and, on the other, to the industries. The most comprehensive I saw was in Chicago. As reported to me by Mr. Robert M. Smith, M.A., the very able supervisor in that city, there are 60 centres with 35 teachers. The statistics of the enrolment of the pupils taking manual training are as follows:—

Grammar Schools: Grade I. 1,400, grade II. 1,650, grade III. 2,800, grade IV. 20,000, grade V. 21,019, grade VI. 40,715, grade VII. 30,813, grade VIII. 24,916.

Manual Training High School, 632.

Besides these public schools there are also private institutions. The Chicago Manual Training school was established in 1883 by the Chicago Commercial Club and has recently been transferred to the University of Chicago. This was the first school of the kind in the western states. It is of the High school grade, charges high fees, and is attended by 280 pupils. The other, the Jewish Manual Training school, in the "Ghetto" of Chicago, is maintained by subscriptions. Its building and site cost \$91,250, with accommodation for 650. It is attended chiefly by the children of poor Russian Jews and is of the elementary grade, corresponding to the Hebrew Technical Institute of New York, which I will describe further on. Manual training is also taught in the Dewey Grammar school, a sort of experimental elementary school associated with the Department of Pedagogy of Chicago University. There and in the Chicago Institute (under Col. Parker) I found some of the latest phases of this and other educational movements.

All the other cities I visited had manual training in some part of the system, but in some, as in Albany and Providence, it is confined to the High school, and in others, as in Utica, to the Grammar schools. In the Boston Grammar schools wood-working is confined to the 8th grade of boys, with a total of only 2,126. The cost has been the chief obstacle in all these cases; for, although wealthy, the populous centres have many other demands upon them. In Providence, for example, both manual training and domestic art were given up in the Grammar schools on the establishment of the Manual Training High school. In Chicago, however, although, as Mr. Smith tells me, in times of

financial stringency, the local economists systematically propose to abolish the Manual Training department, the agitation has heretofore always ended in a greater extension of the system.

As in the High Schools, associated with Manual Training and often included under the same head, I found the Domestic Arts (sewing and cooking). These subjects being of evident utility are oftener found in the elementary schools than Manual Training. They are, of course, taken by girls, sometimes along with wood-work; usually in place thereof; but it is by no means uncommon to find boys also taking sewing and even cooking. I may add, in passing, that very properly, a course in cooking is a recognized part of the curriculum for M. D. in the Harvard Medical department. In the Grammar Schools the teachers of Domestic Art are women. So, too, usually are the teachers of Manual Training. In Boston, for example, there are 20 special female instructors in cooking, 40 in sewing, and 18 in Manual Training, there being 7 male teachers also of the last named subject. With our Ontario prejudices, it will seem strange that working in wood should be taught by women; but, as I have already said, this is naturally regarded by educationalists as the best feature of the organization. Most, indeed, of the elementary teachers I saw were women, and most of the students in Mr. Larrison's and the other training classes were also women. Sometimes the teachers take these subjects in addition to their other work, but in the larger cities and where the Grammar School is large, the teachers are specialized. The centre system in particular (the system adopted in Brockville, Ottawa, and Toronto) is found to be both effective and economical. In some other cities, the teacher goes from school to school; but, in the case of cooking and manual training, this entails considerable expenditure for accommodations and equipment. Of all the Grammar Schools I saw, the equipment and organization of the William T. Lincoln School in Brookline seems to me to be the best. It is under the principalship of a woman and showed every sign of being ably managed. It is exceptional in having not only the usual Grammar School equipment but also a physical and a chemical laboratory like those in our smaller High Schools. For Domestic Art it is also well equipped, Sewing and cooking are taught by special teachers, and its outfit includes a room for cooking and a well furnished dining room. In its two higher grades it is practically a High School. Probably the work there is as much as many of our Schools can attempt, and I accordingly give its programme. The average age of pupils in the ninth grade is over 15. The total time given Manual Training and Domestic Art in the Brookline Grammar School is 50 minutes a week in grades I—III, 60 in grades IV and V, and two hours in the higher grades. Latin and French, which are taken in grades VII—IX of the other Grammar Schools of the city, are not taught here, but more time is given to Domestic Art and Manual Training.

BROOKLINE GRAMMAR SCHOOL.

MANUAL TRAINING.

The Kindergarten, Gifts and Occupations :

Grade I. Selected Kindergarten occupations work in connection with other studies.

" II. Paper cutting and folding. Construction work in connection with number, language and history.

" III. Clay modelling and card board work.

" IV. Knife work with wood of two dimensions.

" V. Advanced work with knife and simple tools.

" VI. Mechanical Drawing, Models constructed from drawings with the use of suitable tools.

" VII. Mechanical Drawing, Projections of geometrical solids, working drawings. Advanced Sloyd and wood-carving.

" VIII. Mechanical Drawing, work of Grade VII continued. Designs copied and [original wood-turning.

" IX. Mechanical Drawing continued. Bench work. Elementary Cabinet making.

As will be seen from the scheme which I give in Part II. of this report, drawing is also taken up in its other aspects.

DOMESTIC ART.

Grade III.—Use of scissors. Short seams. Basting, stitching, back-stitching, running, hem felled, oversewing, overcasting, hems measured and finished. Supplementary work. Work-bag of checked linen.

Grade IV.—Three inch model of French seam. Mark name by stitching. Hemmed-on patch. Stitched-in patch. Supplementary work: White muslin apron with drawing string.

Grade V.—Oversewed patch used on lighter cloth. Darning stockings. Making button-holes. Supplementary work: Cooking outfit for sixth year, to be cut and prepared by girls of higher grade.

Grade VI.—General care of house; airing, sweeping, dusting, cleaning, care of beds, table setting, washing of dishes, care of fire, stove and lamps. Make truck measure; fold cloth for truck; make gusset measure; cut and sew gusset in end of seam; sew gathered piece into a waist-band; button holes and loops; sew on buttons with tape; whip and sew on ruffle; darning. Supplementary work: white cloth skirt.

Grade VII.—Water and its effect upon foods. Milk as a typical food. Fat in cooking. Experiments with albumen and starch. Cooking of eggs, vegetables and cereals. Bind white cloth sampler with thirty-five different models of sewing. Supplementary work: Diagrams for undergarments drafted from measurements; study different qualities of cloth.

Grade VIII.—Combinations of starch and proteid. Cooking of fish and meat, meat soups and gelatine dishes. Yeast bread. Baking powder mixtures. Study flannels of different weight and their adaptation to different uses. Materials for stockings, Ginghams and muslins. Fine darning. Use of sewing machine. Supplementary work: Flannel skirt finished with slight embroidery; hem-stitched undergarments; Mexican work; lace work.

Grade IX.—Canning of fruit and jelly making. Plain pastry, cake, simple puddings, salads, frozen dishes. Invalid cookery. Shirt waist cut and fitted and made on machine. Dress lining fitted by the "art of pinning on." Dress cut, fitted and made. Hooks and eyes. Sewing on of braid, etc. Millinery begun. Notes taken of all lessons.

KINGSTON (ONT.) PUBLIC SCHOOLS.

MANUAL TRAINING.

Here I give also the scheme for elementary Manual Training in the Kingston (Ont.) Public Schools, now partly in operation, and to be carried out before long in all its details. Cooking has not yet been added, but, no doubt, it will soon come. The undertaking is a modest one compared with that of the Brookline School, and should not be beyond the capabilities of even our smallest city and town schools. The cost here will not be the obstacle so much as the lack of competent teachers. A scheme like this, with elementary Sloyd in Form IV, should also be practicable in the larger centres.

FOR BOYS AND GIRLS.

FIRST.

Junior, Part I.

Holding pencil, drawing lines, stick laying, use of colored tablets for simple designs and borders, paper folding, sewing.

Senior Part I.

Drawing lines and combining them into simple geometric figures, stick laying, use of colored tablets, paper folding, sewing.

Part II.

Freehand drawing, consisting of lines and simple objects, stick laying, use of colored tablets, paper cutting and folding, sewing, Nature study.

SECOND.

Drawing, freehand and object, paper folding and cutting into ornamental patterns, sewing, Nature study, leaves, their outlines, forms and surfaces, color work with crayons.

FOR BOYS.

FOR GIRLS.

JUNIOR THIRD.

Freehand drawing.
Object drawing, freehand and with rulers.
Nature study from objects only accompanied by color work with crayons.
Cardboard work, cutting, scoring, folding into geometric solids.

Drawing, freehand and object.
Nature study from objects only, accompanied by color work with crayons.
Sewing.

SENIOR THIRD.

Freehand drawing.
Object drawing with rulers and squares.
Nature study from objects, with drawings.
Coloring of patterns and drawings.
Designs in water color.
Cardboard work.
Chip carving and cutting.

Freehand and object drawing.
Nature study from objects with drawings.
Coloring of patterns and drawings.
Designs in water colors.
Sewing and making of simple articles.

JUNIOR FOURTH.

Freehand drawing.
Object drawing with rulers and squares.
Geometric drawing.
Nature study from objects, with drawing and water color sketches, leading to simple designs for ornamentation and use.
Chip carving and cutting.

Freehand and object drawing.
Making simple designs.
Nature study from objects, with drawing and water color sketches.
Designs in water colors for ornamentation and use.
Sewing, cutting, and making simple garments and other articles.

SENIOR FOURTH.

As in Junior IV. Continued.

As in Junior IV. Continued

HEBREW TECHNICAL INSTITUTE.

A peculiar development of the manual training movement—the Hebrew Technical Institute of New York—deserves special notice. I had been advised to visit this institute as one which had grown up under adverse conditions and which accordingly presented some exceptional features. It happened to be a Jewish holiday when I visited the school, but, owing to the courtesy of the principal and another member of the staff, I had an opportunity of discussing the situation and of inspecting the building and the equipment. The school has been in existence over 17 years, and is supported by the voluntary contributions of the Jewish community. Until recently, none but Jews were admitted, but it is now open to all comers. So far, however, none but Jews have presented themselves. Tuition books, tools, are all provided free. To be admitted a boy must be over 12 years of age. The average age of the senior class is, I find, about 16, and, so far as I could ascertain, the academic standard corresponds to that of our public school 3rd, 4th and 5th forms. The school is peculiar both because it represents a lower grade than the Manual Training High School, and because it confessedly partakes of the nature of a Manual Training School, a Polytechnic Institute, and a Trade School. As a matter of fact, though, its courses seem to me to differ from those of the Manual Training High Schools only in being of a more elementary character and in emphasizing the economic side of the course. In many respects the work resembles that done in the Toronto Technical (Evening) School as at present organized. During the first two years the pupils are instructed in those subjects that will be of use to them, whatever pursuit they finally choose; and, in the third and final year, they give special attention to that branch of work which is most agreeable and suitable to each. Some of the graduates of the school continue their studies in the higher Polytechnic and Engineering Schools; but the large majority eventually become skilled mechanics of various kinds, foremen in wood-working and metal-working shops and the different electrical industries, and draughtsmen in architects' offices and manufacturing establishments. Below I give its programme, as the courses are typical of another class of school and may prove suggestive in those localities in Ontario which may begin the technical work in the Public Schools and continue it into the High Schools.

COURSE OF INSTRUCTION.

The methods of instruction include recitations, lectures, laboratory practice, and shop work.

JUNIOR YEAR.

ENGLISH STUDIES.—Reading; Spelling; Definitions; Penmanship (vertical system); Language Lessons; Exercises in Composition and Letter Writing; American History; Elementary Geography; Map Drawing.

MATHEMATICS.—Arithmetic: Common and decimal fractions; denominate numbers; square root. Geometry: Study of form; plane mensuration; involutionary geometry.

APPLIED SCIENCE.—Properties of matter; elementary laboratory work; simple experiments in electricity.

Experimental chemistry; construction of simple apparatus at home.

MECHANICAL DRAWING.—Instruction in the elements of drawing; handling of instruments; exercises in the use of T-square and triangles; working drawings of joints and bench exercises; lettering.

FREE-HAND DRAWING.—Object Drawing. Solid, with straight edges, single and in groups; sphere and cylinder: practical applications.

Decorative Drawing: Construction of rectilinear plane figures based upon the square: borders in Greek and other styles; practical applications. The circle, regular triangle, and polygon; simple rosettes; oil-cloth patterns; use of water color.

WOOD WORK.—Practical models; uses of the bench and the chief wood-working tools; principal characteristics of wood; construction in thin wood, using the bracket saw; exercises with plane, chisel, and other tools; articles illustrating their use.

MIDDLE YEAR.

ENGLISH STUDIES.—Language Lessons; Composition; Letter Writing; Business Forms; Penmanship (vertical system).

History of the United States completed.

Biographies of eminent men of America, and its political and scientific developments.

Geography, completed; Map Drawing.

Industrial Topics; Study of Woods.

MATHEMATICS.—Arithmetic, completed.

Algebra, taken up by those who finish Arithmetic before the close of the year.

Plane and solid mensuration.

APPLIED SCIENCE.—Physics; mechanics; heat; light; sound; laboratory work

Electricity; laboratory work in static electricity and magnetism.

MECHANICAL DRAWING.—Working drawings for bench and lathe exercises; geometrical drawing; projections and drawing as applied to machine-shop exercises; elementary architectural drawing; lettering; blue-printing.

FREE HAND DRAWING.—Object drawing: Cylinders; wheels; cones; vanes; classic and modern forms; practical applications. Home lessons.

Decorative drawing: Conventional flowers and leaves; rosettes; borders; compound flower ornaments; waving and spiral lines. Ornaments based on practical forms; wall paper designs; water colors.

WOOD WORK.—Exercises in joining and constructive carpentry.

Lathe work: Centre work; face plate work; geometric solids.

Construction work: Joints; model of a window sash; model of a locked box.

Wood carving.

METAL WORK.—Instruction in the quality and manufacture of brass and iron; use of the different chisels, files, and small tools; chipping and filing; speed lathe work; use of drill press, planer, and shaper.

SENIOR YEAR.

The student pursues all the studies of the general course, and, in addition, those of one of the four special courses.

General Course.

ENGLISH STUDIES.—Grammar; American and English literature; essays; physical geography; industries and natural resources of the United States.

Talks on woods, metals, coals, building materials, and kindred subjects.

Lectures upon general science, illustrated by stereopticon views; upon the preservation of health; of citizenship.

SCIENCE.—Physical arithmetic as applied in the laboratory.

General view and final examination in arithmetic.

Algebra.

Plane and solid geometry as applied in the shops.

APPLIED SCIENCE.—Physics: Experimental mechanics; advanced laboratory work; construction of apparatus.

Electricity: Electricity and magnetism as applied to the telegraph, telephone, lighting, transmission and distribution of power.

Primary and storage batteries; electric heating and welding.

Chemistry: Lectures and elementary experiments; laboratory work.

The application of chemistry as in soldering, brazing, the making and use of varnishes, paints, oils, and insulating materials. Electro-chemical action.

Steam engine: Practical illustration in the engine room; boilers, pumps, and valves.

MECHANICAL DRAWING.—Cabinet projection; working drawings for pattern making; working drawings for machine-shop exercises; architectural and machine drawings. Lectures upon machine designs and mechanics.

FREE-HAND DRAWING.—Drawing from casts, flowers, and fruits; practical applications to decorative work; sketching.

WOOD WORK.—Advanced lathe work; pattern work; moulding and casting; cabinet work; veneering and polishing; construction work in carpentry.

METAL WORK.—Elementary exercises on speed lathes; turning on engine lathe; planing; drill press exercises; gear cutting; tool making.

Special Courses.

(a) MECHANICAL DRAWING, TWO HOURS PER DAY.—Parallel and angular perspective; architectural drawing; foundations; piers and walls; floors, roofs, and stairways; structural iron work; round writing; artistic lettering; tinting.

Machine drawing: Isometric and cabinet projection; wheel gearing; boiler settings; details of steam engine and dynamo; details of special machines; assembled drawings.

(b) WOOD WORKING, TWO HOURS PER DAY.—Advanced pattern making at the bench and lathe; moulding and casting in lead; carpentry work; cabinet work; wood carving.

(c) METAL WORKING, TWO HOURS PER DAY.—Machine work: Building some machine or apparatus, as speed lathe, dynamo or galvanometer; thread cutting, inside and outside; use of milling machine; reaming and boring; making taps, chucks, and face plates; gear cutting; tool making.

Tempering and grinding tools; die sinking; forging.

(d) PRACTICAL ELECTRICITY, TWO HOURS PER DAY.—Lectures and recitations two hours per week.

Experimental work: Electro-magnetism; primary and storage batteries; dynamos and motors; electrical measuring with amperemeter; voltmeter and Wheatstone bridge; electrical testing of dynamos, motors, and arc lamps; construction of apparatus for use in demonstrations and experiments.

TRADE SCHOOLS.

To the trade schools I gave no special attention. So far as I could ascertain, there is no systematic provision for them outside of the State-supported industrial schools for criminals. They are the outcome of private effort, occasionally helped by State and municipal grants. The State of Massachusetts, for example, has a standing offer of \$25,000 to any city or corporation which will establish a textile school under certain conditions. As I have already pointed out, evening trades' classes are associated with some of the manual training and higher technical schools. There are also such special or monotchnic schools as the Lowell Textile School and the textile school recently established at New Bedford (Mass.) which teach the theory and practice of cotton manufacture, the construction and operation of the machinery, and the artistic principles involved in the production of desirable and ornamental fabrics. These are intended for pupils who have taken the grammar school course, and are maintained in connection with the local factories. Other similar schools are the Rhode Island School of Design (Providence) for artisans, with courses in drawing, painting, modelling, and designing, supported by subscriptions and small grants from the city and the State; the Franklin Institute (Philadelphia), an endowed school with courses in elementary mathematics, drawing, and naval architecture; and the New York Trade School. The last mentioned may be taken as the best type. For the following particulars I am indebted to Mr. James Russel Parsons, junior, Secretary of the Board of Regents, Albany: Total annual expenditure \$37,266; a staff of 30 instructors, with about 600 pupils; a merely nominal fee which meets but a fraction of the cost. Evening classes in bricklaying, plastering, plumbing, electrical work, carpentering, house painting, steam-fitting, fresco-painting, blacksmiths' work, tinting, sign painting, sheet-metal cornice work, and drawing. Day classes: Plumbing, house and fresco painting, sign-painting, sheet metal-cornice work, bricklaying, plastering, carpentering, steam and hot-water fitting, and electrical work. A certificate is given to those whose work has been satisfactory. The school is liberally endowed by private philanthropy.

The report of the United States Commissioner of Education does not give the trade schools separately. They are enumerated with the manual training schools, and the list is admittedly incomplete. Certainly, however, there is no such development as we find in Germany, and they owe their existence and maintenance chiefly to private enterprise. The trade school is comparatively new to the United States. It has been long established in Germany, where its existence is due as much to the character of the people as to their economic necessities. There a boy's career is usually marked out for him from the first. If his father is a workman, he becomes one, too, or he follows the trade of the locality. And he usually remains a workman; his chances of rising are few. In the United States there is no such fixity; it is foreign to the genius of the people, and the intelligent boy has "all the world before him where to choose." As has been well said, "In Germany society is stratified horizontally." There, too, the technical system has for its object better economic production. The theory in the United States is that the advancement and development of the individual are the main objects; the economic one is secondary.

NORMAL TRAINING INSTITUTIONS.

An account of manual training in the United States would be incomplete without a reference to that very important branch—the professional training of the teachers. The wholly erroneous theory that, to make a good manual training teacher, all that is needed is intelligence, and the technical skill of the mechanic has, in some localities, brought discredit upon the department. Technical skill, although to a certain extent essential, is really not the most important qualification. The teacher—the elementary teacher in particular—must be an intelligent and trained student of the laws that govern the healthful growth of the young body and mind, and be able to determine and apply the best means of training the creative faculties in accordance with these laws. The skilled mechanic is very generally a failure, especially with young children. We might infer the truth of this proposition *a priori*, but, in the experience of some localities in the United States, we have had a practical demonstration. The poor work I saw—and

I did see some very poor—was always by this class of teacher. Manual training is an educational subject; and, to secure satisfactory results, the men or the women who teach it must have a good general education and professional training as well as the necessary special knowledge and skill. With an added special course (take the case of Mr. Clarke, of Woodstock, for example) the trained teacher can do this work also, and so remove what is often the chief obstacle in the way of introducing a new subject.

As I have already said, the Drexel Institute provides normal classes in manual training, and in domestic art and science; and the Pratt Institute, in the latter. The two best of the other training schools I visited were the Sloyd Training School, of Boston, under the principalship of Mr. Gustav Larsson, and the Teachers' College of Columbia University, New York. In the latter as well as in the Framingham Normal School, Mass., there are also normal classes in domestic art and science. But, notwithstanding this and much other provision for training teachers, there is still a great dearth owing largely to the rapid progress of these departments.

The Sloyd Training School was established by Mrs. T. A. Shaw in 1888. It represents private experimental work in the interests of education and offers free instruction to teachers in mechanical drawing and wood work, and in the pedagogical bases of the subject. Connected with the training school proper is a room for classes of children (the building is one of the city "centres" which provide opportunity to the normal students for observation and practice. Mr. Larsson's system—the system, indeed, which has survived in the Boston grammar schools, and is most prevalent in the States—is known as American Sloyd, and he himself is recognized, I believe, as its best practical exponent in America. The Teachers' College is the professional school of Columbia University for the study of education and the training of teachers. It takes academic rank with the schools of law, medicine, and applied science. Its course is a very full and comprehensive one, and its buildings and equipment are amongst the finest I saw—certainly the finest for normal school purposes. For this faculty, the University grants diplomas, but no degrees as yet. Special features are its Fellowship and Scholarship fund of \$5,750 annually, and its loan fund for needy and worthy students. Its fees, however, vary from \$100 to \$150 in the manual training department, and from \$75 to \$150 in domestic science and art. Connected with it are two schools of observation and practice—the Horace Mann School (with higher fees) for observation only, and the Experimental School, attended by grammar school pupils, for observation and practice. Both schools have kindergartens (3 years to 6) and a grammar school department, while in addition the Horace Mann School has a High School, with a four year's course, and the Experimental School is a centre for instruction in sewing, cooking, and manual training. The pupils of both schools take the classes in manual training and domestic art. Here, as well as in Mr. Larsson's school, the normal courses for teachers of elementary and of secondary schools are each of two years; but the time may be abridged in the case of students who possess exceptional ability.

What Mrs. Shaw has done for manual training in Boston, the late Mrs. Hemmenway, of the same city, did for domestic science and art. The Boston Normal School of Cookery was founded by her in 1887, and maintained till 1898, when her trustees transferred it to the Framingham Normal School, situated about 25 miles from Boston. Here a large handsomely furnished room is devoted to the cooking department, and the subject is made a prominent feature of the curriculum. The girls in the 8th and 9th grammar grades of the town come to the school once a week for lessons in cooking. These grades are broken up into a number of classes and are taught by the seniors, each having charge for a year and being assisted by the juniors, who in this way have a year's observation and practice to prepare them for assuming the full management in the second year. The practical part of the work I found especially instructive. The students do the marketing in the town, and even in Boston, where they also visit the kitchens of some of the larger hotels. Economical buying and a good knowledge of material thus go hand in hand with the ordinary school course. Indeed, what is especially noticeable in all the American schools is the eminently practical character of the courses. In Framingham there is also a manual training department which follows the Sloyd system and in which all the seniors must spend some time each week. I saw nothing in this Normal School which we should not be able to secure at once in our Normal College, and before long in our Normal Schools.

From the preceding account of manual training and technical education in the United States, it must be evident that the provision therefor is, in some respects, strikingly different from that of Germany, which I have already described. In the United States the apprenticeship system has almost entirely disappeared. In Germany it is still in existence, reinforced by compulsory supplementary training of an elementary general as well as technical character. In the United States, where education is a matter for local control, there is no general system of technical education, and what there is is still in its beginnings; and, in some important respects, both opinion and practice are yet unsettled. In Germany, on the other hand, where the state has full control even when it gives no grants, there is an elaborate and well organized system of intermediate and higher technical education which has existed for over a quarter of a century. And what is equally important, Germany differentiates the general from the technical; the United States does not. Both systems are of course the natural products of the different conditions and the different characters of the people.

THE SITUATION IN ONTARIO.

For a year or so there has undoubtedly been a well marked, though limited, movement in this province in favor of domestic art in our schools and, to some extent, in favor of manual training. This is probably due as much to the widespread feeling that, in some respects, our courses are not practical enough, as to the progressiveness and liberality of individuals. A further impetus has been given to the movement in favor of manual training by the efforts of the Ontario Manufacturers' Association to secure a share of attention for the industrial interests.

So far as I know, no important provision has been made in Ontario for instruction in the household arts except in the Ontario Normal School of Domestic Science and Art in Hamilton (opened in 1900) which we owe to the energy of Mrs. Hoodless of that city, and the Victor School of Household Science and Art in Toronto, which was established by Mrs. Lillian Massey-Treble, to whose munificence the city is indebted for what is undoubtedly the finest school of the kind I have seen. Both of these schools provide special courses for teachers as well as for all other classes of students. These courses, so far as I can judge, are at least the equals in every way of the best in the United States. Sewing is, I believe, taken up in a few of our public schools, but as yet to only a very limited extent. To Sir William MacDonald of Montreal, the generous benefactor of McGill University, Ontario owes the manual training department of the public schools in Brockville, Ottawa, and Toronto, all of which (with others in the other provinces) he has equipped and proposes to maintain for three years as an object-lesson to the people of Canada. For some years the Kingston Board of Education has had carving and some other simple forms of manual training systematically taught in its public schools by a specially trained teacher. Last year it established also a manual training department in its Collegiate Institute, and a similar department is under weigh in connection with the Public Schools and Collegiate Institute of Brantford. Here I must include the manual training department of Woodstock College, so far the best equipped of the class in the Dominion. We have also, of course, the mechanical and industrial departments of our Art Schools, but the courses there lack the vitalizing elements of the manual training schools. Of evening classes of a somewhat technical nature, we have a very few, the result of voluntary effort in one or two of our cities. There are, I find, only two such classes in connection with our Mechanics' Institutes. But, from financial and other causes, all these are as yet an inconsiderable factor in provincial education. The most important institution in this connection is the Toronto Technical school, established and maintained by the city of Toronto. As I will refer to it further on and as it should eventually become the leading intermediate technical school of Ontario, I submit a statement of its accommodations, equipment, and courses. I visited it last month with Dr. McMaster, the principal, and am indebted to him for particulars. The cost of the building and equipment will total about \$83,000. It contains as follows: 17 lecture and demonstration rooms, with ample provision for drawing and modelling, 3 lecture rooms for chemistry, mineralogy, and domestic science, with 26 other rooms, waiting rooms, private rooms, store rooms, etc., and a salesroom for students' supplies. The heating and ventilation are excellent, but the position of the windows and the size of the corridors might be more suitable. Al-

though it is the old building of the Athletic Club remodelled, the work has been surprisingly well done, and the accommodations compare very favorably with those of most of the United States manual training schools. At present it has a staff of thirteen teachers and provides only evening classes for artisans and others. There are now 1,128 on the roll. Applicants must be at least fourteen years of age and must possess a working knowledge of the elementary public school subjects, but the grading in the school is based on their mathematical attainments. The work is arranged in the following departments: (1) physical science, (2) mechanic construction, (3) architecture and building construction, (4) chemistry, (5) industrial design; with special courses in (a) domestic science and art, (b) mineralogy, geology, and metallurgy, (c) electricity, steam, and gas engines, (d) clay modelling. The accommodations and equipment of this school differ from those of similar institutions in the United States in having no "shops," or mechanical laboratories.

This is all of importance that has been done so far for elementary technical education in this province, and the attendance more than justifies the provision. As a further proof of the necessity of extending the system of technical evening classes, I may add that I have been informed in various trustworthy quarters that the International Correspondence Schools of the United States do a "roaring trade" with the young mechanics of our cities and towns. Indeed, in my inspectorial work I have occasionally come across the agents of these institutions in the hotel sitting rooms, surrounded by young men from the local factories who were arranging for their courses. Whether these correspondence schools can be made to take the place of technical evening classes where such are not available, is still a question unsettled from the educational point of view. But there is no doubt of their financial success. The oldest of them is said to have no fewer than 200,000 students on its roll, with thousands from Ontario! Nor, with such a showing, can there be any doubt as to the necessity of supplementary technical training for artisans.

As to Trade Schools: The only real one we have in Canada is the Canadian Horological Institute, under the direction of Mr. H. R. Playtner, who opened it in Toronto some years ago. The school occupies a flat, and the building is well lighted and convenient. About \$5,000 has been spent on the equipment. For young men with some experience there is a one year's course and the fee is \$165 or \$180. A full course for those without experience is two years; the fee being \$330 or \$360. The school has sometimes an attendance of about 30—there were 16 present when I visited it—and its efficiency is vouched for by competent judges and the success of its pupils. There are also in Toronto, I believe, two private schools for opticians, one in connection with a manufactory; and in St. Thomas the M.C.R. provides evening classes for its apprentices.

In the highest work of a technical system this Province has made a good beginning in our School of Agriculture at Guelph, and our School of Practical Science at Toronto, both state-maintained institutions. Queen's University, Kingston, has a faculty of Applied Science (with "shops"), and a School of Mines; the latter being partly state-supported also. The students of these schools are in much demand and there is an overflowing attendance. Everything points to the necessity for further developments along these lines.

THE ECONOMICAL AND THE EDUCATIONAL ASPECT.

But my report is concerned mainly with manual training in its relation to primary and secondary education. As the question has been presented to us in Ontario, it has two aspects—the economic and the educational one, the former being in the minds of most by far the more important. The problem we have now to consider is: What can we do to improve the condition of our industries and at the same time to secure a needed change in our system of education?

As to the economic aspect: In order that my report should deal with facts, so far as I could ascertain them, I requested the high school principals in the manufacturing and other centres of population to investigate the situation in their localities. I have received answers from about forty-five. In many cases definite numbers were not procurable; but enough was given to show the situation. In the case of Ottawa and Toronto, owing to their population and the variety and number of the manufacturing establishments, I have been unable to obtain any definite particulars, but I have obtained enough to justify me in concluding that the conditions there are largely the same.

The general conclusions I draw from the answers are as follows:—

1. Under present circumstances, extremely few High School pupils from any of the forms—not, I believe, 5 per cent. of the total attendance—enter the manufacturing establishments in any other capacity than that of clerks or office hands.

2. Of those that enter from the Public Schools, and they are quite numerous in the manufacturing centres, with few exceptions they go from the fourth form, and in many—most, I fear—of the localities outside of the largest centres they leave school before they have completed the studies of the form. Such pupils are often reported as remaining at school only until they are old enough to begin work. The following illustrates the situation: In Hamilton, four left the Collegiate Institute last year for the factories; 140, the public schools (not including those from the separate schools); in Toronto Junction, of those now in the factories, 19 are from the high school, 129 from the public schools; and in Lindsay 90 per cent. of all the hands have come from the public schools, the remaining 10 per cent. being about equally divided between old countrymen, and Canadians who have had a short course at the Collegiate Institute.

3. Manufacturers generally, having in view, of course, the industrial aspect of the question, favour the introduction of manual training into the public and high schools. Some of them hold that we shall then retain the pupils longer in our schools, and thus supply a better educated and more useful class of workmen. Many complain of the lack of education and trained intelligence of the boys and girls that come to them. We have provided in our high schools for the preliminary training of professional men, and we undertake in our bookkeeping, our stenography, and our typewriting, to prepare boys and girls for the merchant's office. The latter provision is, of course, technical. To be consistent, they hold we should recognize the industrial occupations as well, especially in view of our enormous natural resources and the increasing importance of our manufactures. In order to show their appreciation and zeal, some of the manufacturers are prepared to give the preference in employment to those pupils who have had this kind of training.

OPINIONS OF ONTARIO PRINCIPALS.

I quote a few passages from some of the answers I received, which show the general situation.

"The manufacturers seemed to think well of manual training, one furniture man saying that a course of wood-working would keep away from him some that can never learn his trade. Another in the same line said that the boys he employs are in many cases hampered by their imperfect knowledge of fractions. As the boys are usually about fourteen when taken on, the question arose why did they not know fractions? The answer was that they had left school years before and had been hanging about home. Mr. Cairnes said that in cutting out gloves what he mainly wanted was intelligence, showing me how a former pupil of mine cut 785 sq. in. of gloves out of a skin which was reckoned enough for 752 inches, while a bad or rather a stupid hand got 44 inches less than had been expected out of a somewhat larger skin.

Few of the manufacturers seemed to have any idea to what extent they employed Public or High School pupils. Many workmen here are Germans or Poles who came grown up. Largely, boys are set to tend machines.

As said before, manufacturers favor manual training, and drawing to scale. The Public School principal thinks that the time could be spared if the Entrance Examination with its excessive memorizing, were done away with. To me it seems a question turning mainly on the readiness of the Provincial Government to pay expenses. High School boards are hard enough put to it already for funds."—*Prin., Berlin High School.*

"About 30 per cent. of the boys who enter the High School, attend about one or two years and then find employment in the factories of the town.

A considerable number of boys from the Public School never enter the High School but find employment in the factories. These boys either run machines or act as assistants to men who run the machines.

About 20 per cent. of the boys from the Public School never even enter the senior fourth class. After discussing the question with our manufacturers, the principal of the Public School, and some members of our Board of Education, I do not hesitate to say that manual training in our Public or High School is quite practicable and desirable. If some of the subjects now on the school course, which are of no practical value to these boys, could be dropped and manual labor substituted in their stead, I think we would be able to hold many of these boys and girls one or two years longer at school. This in itself would be worth much to them. If this change in our school course could be effected, the large number of unskilled laborers which we now have, would be replaced, in time, by intelligent master workmen who would have a 'why for every how.'"—*Prin., Gananoque High School.*

"All of the proprietors thought that manual training should be taught in the schools, so that boys might, at an early age, say at 13, begin to acquire skill and knowledge of tools and machinery. After such a preliminary training they could more intelligently decide what calling or department of work to follow. A course of this kind would also keep the boys longer in school, and their literary training might go on simultaneously with the mechanical drills.

Mechanical drawing was warmly advocated."—*Prin., Chatham Collegiate Institute.*

"I have had many requests from boys just entering the Collegiates to be allowed to dispense with some of the obligatory subjects and take electricity and some chemistry, but on account of the regulations I could not allow that. I sometimes think that when a boy enters the C. I. and has only a short time to remain, and knows that he is going into some electrical works, he should be allowed to take a course that would more directly fit him for the object he has in view."—*Prin., Guelph Collegiate Institute.*

"A school for manual training would be popular in Galt and would be well attended. Parents would be able to find out whether a child has any liking or aptitude for a trade, and manufacturers say that such apprentices would be more intelligent and would not waste so much material. No greater boon could be given to this district. It is only a question of funds.

The question of opening a school for the teaching of Domestic Science in Galt is to be discussed within a few days by a joint committee from the Collegiate Institute Board and the Public School Board."—*Prin., Galt Collegiate Institute.*

"The boys from the High Schools rarely learn a trade. The employers say they often come from the street, having driven wagons, etc., after leaving the Public Schools. I believe working in wood, metal, with drawing, eminently practicable; moulding is of less value. All the great employers, as Leonard, McLeary's, Yates of London Tool Co., are enthusiastic about the matter. They would give the positions to boys who had taken the course in preference to others. They are very desirous of obtaining a more intelligent class of apprentices. There is a strong feeling among the manufacturers in favor of Manual Training. They think it should be in connection with High Schools, as boys should begin about 12 years of age. London is largely a factory town, and our High School is doing very little for those entering into trades."—*Prin., London Collegiate Institute.*

"The manager of the Sylvester works is very strongly in favor of having manual training in the Public Schools. He thinks it could be begun in a simple way and gradually lead to more difficult work, and that the young mechanics of this country would be worth two or three times their present value if they had some training in school. He says that very few of them will go to Technical Schools after they have left school and have been at a trade for a few years, and that in consequence the ordinary factory hand knows only enough to run his own machine. He thinks this would completely change if manual training were taken up in the Public Schools. The Chairman of our Board has given some thought to this phase of education and thinks that the Government should establish for trial in a number of schools in the larger towns manual training as a feature of the Fifth Form work of the Public Schools."—*Prin., Lindsay Collegiate Institute.*

"In answer to your inquiries as to the practicability of introducing a Technical Education course into our schools, we would say that we have greatly realized the need of it. We find that as a rule our apprentices come from the Public Schools, and have no idea at all of the different branches of our trade, viz., cabinet making, carving, finishing and upholstering, and for some time are of little or no value. Consequently their wages are small, and this brings us an inferior class of apprentices. If they had been taught even the first rudiments of their trade, they would be far more valuable to us, and we could afford to pay them higher wages; and this would overcome a great drawback in developing our manufacturing industries. Such a course in our schools would no doubt bring to light great abilities in mechanical lines now lying dormant."—*Letter to Prin. C. I., Ingersoll, from the Ellis Manufacturing Co.*

"The apprenticeship system has almost passed away and manufacturers find it harder to secure boys for shop work than formerly, though there is no lack of boys who wish to take up office work. Several gentlemen assured me that boys with a good English education such as a High School gives, could earn between 400 and 500 men, told me that all his foremen are Americans.

There is general feeling among the manufacturers I visited, and the Public School authorities I saw, that a course of Manual Training in the schools would be productive of much good, in turning the attention of boys away from the professions and directing them to the manufactures, where, it is stated, most of the prizes now lie. Most of them emphasized the value of a sound English education, coupled with a knowledge of the uses of tools, and the ability to apply that knowledge in practice. All thought the High School the place to give Manual Training, as the Public School pupil is too immature to profit by it. That a course in Manual Training would attract pupils to the High School, I have no doubt. That such a course could be added to the present curriculum, I have no doubt. The chief difficulty in establishing such a course would be in inducing Boards to spend the money necessary to put up the requisite buildings and equip them properly."—*Prin., Woodstock Collegiate Institute.*

"I have consulted with the superintendents of the various manufacturing works as to the education and knowledge that a boy should have in order that he may become an expert workman. The answers are briefly summarized in this way: In constructive works, apprentices should have ability to perform the simple operations of arithmetic with quickness and accuracy; they should also have command of algebra, trigonometry and geometry as they are applied in the practice of mechanical and physical work, and should know thoroughly the physics of machinery, and mechanics. Mechanical drawing, inclusive of free-hand, is also a necessity. A knowledge of tools, their adjustment and uses, such as comes from practice with them, and an acquaintance with common machines, their method of working, their driving, gearing and adjustment will prove of great service to the boy, and will be a means of hastening his promotion to positions more lucrative both to him and to his employers.

In the textile works, the remarks about machinery and tools also apply, but the mathematics are not so important unless the boy wishes to learn the machine shop practice which is now a part of most large factories, in order that he may be able to repair or alter pieces that require such attention."—*Prin., Kingston Collegiate Institute.*

"The one great complaint I found among the manufacturers and master mechanics was the need of better educated boys to learn the trades. Mr. Patterson, Superintendent of the G.T.R. shops, showed me a package of answer papers he had examined, and, though the candidates were over 15 years of age, their

attainments were of a low grade. In every case the employers complained almost bitterly of this lack on the part of their apprentices. I was told of a boy who had difficulty in writing his own name. In another case the employer found that one of his men—a comparatively young man—could not read. In many instances, boys are found who read and write with much difficulty.

"Whether the conditions will be found the same in other centres as they are here I am not prepared to say, but it is a deplorable fact that boys should begin their life-work so poorly equipped as I find them. There can be no doubt that parents who intend their boys to become mechanics, and as a consequence the boys themselves, place very little value on a fairly good education. The argument is urged: 'My son is to be a mechanic; of what advantage will it be to him to get more than the merest elements of an education?' To assist in remedying this state of things seems to me to be the prime duty of our secondary schools; to recognize in our system the need of preliminary training for those boys who are looking to the trades for an occupation; to increase the intelligence of the mechanic by keeping boys who are to become blacksmiths, carpenters, &c., longer at school than they remain at present; and to give them considerable scientific and some practical acquaintance with the subjects to which they are to devote themselves."—*Prin., Stratford Collegiate Institute.*

I submit also the opinion of one of our ablest and most experienced Principals: he sounds a note of alarm that deserves attention:—

"In the lower grades of the P.S., where both girls and boys do the same work, paper work, drawing, carving, I suppose it could be done here as well as in Toronto. After that, when boys and girls have to be separated, the difficulty is the expense. A new room for each would have to be built, and a teacher of carpentry, and a teacher of domestic science engaged. It seems to me the same difficulty would present itself in the High School. There is not a vacant room in either High or Public Schools. In fact, the trustees may have to build new rooms for Public School accommodation this year. Many grumble at the expense of the schools now. I am sure the addition of manual training such as will be of any real use, will largely add to the burden. There is no doubt it can be done, if people will stand the expense.

I may be wrong—I have never seen manual training or domestic science taught—but it does seem to me the world is demanding more and more of the teacher every day. Where do the parents come in? Have they no responsibilities any more. What are the mothers of the land doing if they cannot teach their little daughters sewing, cooking, &c.? Do fathers no more teach their boys to make little articles? It seems to me the age is an age of babies that have to be taught everything. Cannot they do anything themselves? Is the whole responsibility to be thrown on the teachers? We are to teach them religion, so say the preachers; teach them to cook, sew, scrub, iron, &c., say Mrs. Hoodless and her followers; if a Toronto judge finds a bad boy, the teachers are not doing their duty, &c. Where does the parent come in?

Another difficulty is the different employments carried on in our towns. In Germany and England and some of the cities of the United States the whole population is employed at one trade, glove making, shoes, weaving, &c. It is an easy matter to furnish training for one particular trade, but what can technical training do in a town like this?

In industrial schools manual training is excellent and indispensable; in large centres of population both manual training and technical schools are possible, but I fear not in our small towns."

As to the educational aspect generally: Most of the High School Masters and the Public School Inspectors and other educationalists in Ontario with whom I have corresponded or discussed the subject, are in favor of giving domestic art and manual training a place in our school course, provided always that the obstacles which I will discuss further on—the initial cost, the lack and cost of teacher, want of accommodations, the already crowded curriculum, examination pressure—can be satisfactorily overcome. There are, of course, some educationalists and others so imbued with the spirit of the old humanities, that they can see no value in this training. Some, not without reason, dread the taint of commercialism and the impairment of our present system. Others again, sometimes through thoughtless prejudice and often through self-interest, deride the whole subject. We may hope, I trust, that there will be no just ground for the fears of the former. The latter, like the poor, are always with us.

RECOMMENDATIONS.

In view of the situation in this province I have to recommend:—

(1) That, for educational purposes, manual training, including instruction in domestic science and art, be placed on a par with the other subjects on the programme of both the high and the public schools. These subjects should, of course, be optional; for it will be many years before public opinion and our resources will justify the action of Massachusetts with its obligatory law. Here I should say that, in the large majority of schools, the only available form of manual training will be drawing; and, as I will point out further on, the course in this subject should be enriched and amplified, to develop more fully the aesthetic sense and to meet our economic requirements.

(2) That, for economic purposes:

(a) A system of evening classes for artisans and others be organized and put in an effective condition. For the actual mechanic, this provision would always be an important one.

(b) That provision be made in our high school regulations for extending the educational manual training into courses of a technical or semi technical nature, forming departments in our existing schools, but taken, when possible, in separate high schools. And all such provision should be of flexible character, so that, as the character of our cities and towns becomes differentiated from year to year, school boards may adapt the details to local conditions; but no such provision should fail to recognize the paramount importance of a good academic education in English, Science, and Mathematics.

An important proviso I must add—and in view of my experience and of my knowledge of the situation I cannot emphasize it too strongly—the Education Department should sanction no provision for manual or technical training of any kind at the expense, even at first, of our existing courses. Notwithstanding all that can be said in behalf of the practical, the claims of the academic must always be paramount.

The German system of education, as we have seen, draws a sharp line of demarcation between general and technical education, and, consequently approaches closely to what an ideal system should be. The better the division of labor, the better the product. But Ontario is not a wealthy and populous community, and in many respects she resembles the United States more closely than she does the German Confederation. The American system, which connects the educational manual training of the elementary classes with the technical training of the High School, is within our reach and is likely to suit our conditions.

A few words as to the order of urgency. As is shown by the answers I received from High School Principals, even from the utilitarian point of view it is the Public Schools that should first and chiefly engage the attention of the Education Department. This is the source whence come most of those who enter the manufactories. The supply often produces the demand, and the High School also deserves attention; but it is to the Public School, for some years at any rate, that we must look for most of our artisans. Every educational consideration also enforces this view. Psychology tells us that it is when the child is in the formative stage—when he is in the elementary school—that the development of the motor centres of the brain should be begun.

But we cannot expect much at first and it would be most unwise to force the question of public opinion. The new subjects were introduced into the United States nearly a quarter of a century ago, and, though good progress has been made, what has been done is meagre compared with what remains to do. In Ontario all we can expect for some years is sewing in most of our Public Schools, and cooking in the cities and towns; both being continued in some of the High schools. Manual training we may have, sometimes of a simple character, in our city and town Public and High schools, with technical extensions in a dozen or so of our largest High schools and Collegiate Institutes. A separate Technical school I do not believe feasible at present in any other place than Toronto. In its Technical school, now for evening classes only—we have the potentiality of a first rate institution. With a wing added for more teaching class rooms, "shops," and an assembly hall, a completed equipment, and effective staff, and one or two additions to its courses, we should have at a cost easily within the capabilities of the municipality, a technical day school inferior to few in the United States. The city cannot long ignore the need of such an institution or the inexpediency of maintaining its costly building and equipment for evening classes alone. The much needed reorganization of the Toronto school system would also most surely follow the establishment of such a school.

The proposal occasionally made to turn some of our High schools into Technical schools is one which, I think, cannot be entertained. Technical education is needed chiefly in the larger centres, and in them as well as in the smaller ones, what the public value most is a general education and courses for business, for the professions, and for teachers' certificates. As I have already said, we should have a separate Technical school in Toronto. In all the other cities, undifferentiated High schools are maintained. Specialization such as we find in the States, has not yet set in. Nor would any of the smaller centres be willing to have the programmes of their present High schools curtailed. The work done by some of the smaller schools hardly justifies the expenditure upon them; and yet, during the past twenty years, only one locality has given up its High school. For a system of Technical education we must for years look to some such scheme as I have proposed.

The question of the Trade school we may disregard for the present. Its maintenance by the Legislature, either in whole or in part, cannot now be a question of practical politics. Indeed, only in Toronto, could such schools be possible. Elsewhere, in the smaller cities and towns, our manufactures have not yet become specialized as they are in England, Germany, and some parts of the United States. Trade schools in our smaller centres would be an impossibility. When, owing to increased resources and the development of our manufactures, this problem presents itself, private enterprise in Toronto, as well as in the States, has already shown us one way in which it may be partly solved. Besides, every year the question becomes of less importance. Every year sees a greater specialization of machinery. Even now a boy can operate a machine which does the work formerly done by over a hundred men, and the artisan of the future will be best equipped if he begins his work after his intelligence has been developed by Manual Training, and above all by the ordinary academic courses. Capability and adaptability will be worth more than the mere skill of the expert.

THE OBSTACLES.

But, as the answers I received from Principals show and my own experience as Inspector leads me to believe, there are very serious obstacles in the way of the introduction of Manual Training into our school system. Apart from difficulties arising out of our present organization, which I will discuss in the second part of my report, and which I may say, are, I believe, not insurmountable, there are two main obstacles—the cost and the want of competent teachers.

(1). As to the cost. For sewing all that is needed is competent teachers; but, for cooking and manual training in wood and iron, special equipment and separate accommodation are needed as well. As to the equipment: I submit a conservative estimate of the cost of a room fitted up in good style for a class of twenty in cooking: this number, Miss Norris, the Principal of the Toronto Victor School, to whom I am indebted for the estimate, regards as the largest a teacher can manage efficiently at one time:

20 desks, each fitted with full length drawer and stand; \$6.00 each (set up).....	\$120 00
20 stools with rubber tips, 60c. each.....	12 00
1 dish and utensil cupboard, 7 feet 6 inches long and 7 feet high, with seven drawers, 5 sections, shelved.....	40 00
Utensils and dishes.....	75 00
1 Range with warming closets.....	35 00
1 sink iron enamelled with back.....	15 50
2 sink tables, \$4.00 each.....	8 00
Linen for towels.....	10 00
	\$315 50

Cupboards to be ash; desk and tables, ash body, birch top; bunsen burners and a number of minor necessities are omitted. Refrigerator not included. No provision for children's aprons are mentioned, as such provision may or may not be needed.

In a good many cooking schools I visited, there were several ranges—one for coal; one for gas; and, occasionally, one for electricity; the object, of course, being to accustom the pupils to the different kinds.

For the following statement of the cost of a "shop" for wood-working, I am indebted to the official report of the Kingston C. I.: it includes the cost of the drawing department:

18 Drawing Tables at \$4.25.....	\$ 76 50
36 Drawing Boards at 60c.....	21 60
18 Sets Drawing Instruments at \$8.75.....	157 50
Miscellaneous Drawing Instruments for demonstration and occasional use.....	53 00
18 Wood working benches, with quick acting vise, at \$17.25.....	310 50
18 Sets bench tools for students use at \$11.14.....	200 52
Miscellaneous wood working tools for demonstration and occasional use.....	53 00
Fitting up the workshop.....	140 00
	\$1,012 62

For High Schools that would attempt courses in hot and cold metal, as well as in wood, the cost would be much larger. What it would be, even in a modest way, may be gathered from the following statement of the value of the building and equipment of the department in Woodstock, which provides for two classes of 24 each in wood and one class of 10 in iron work :

Building, brick 2 ¹ storeys 30x80 feet.....	\$2,500
24 Carpenters' Benches at \$12.50.....	300
24 sets of tools at \$15.00.....	360
24 Wood Lathes at \$30.....	720
Shafting, Belting, etc.....	650
Wood carving Benches for 24.....	120
24 Sets Carving Tools.....	100
Special Tools for occasional use.....	150
Wood Working Machinery (Planer, Circ. Saw, Scroll Saw, etc.).....	400
10 horse power Gas Engine.....	750
Blacksmithing outfit for 10.....	300
Machine Shop Tools for Iron Work.....	2,500
Small Tools for Machine Shop.....	200
	\$9,050

For the following particulars I am indebted to Prof. Robertson, of Ottawa, who has charge of the Macdonald Manual Training fund: the statement gives the cost of fitting up one of the manual training rooms :

The Manual Training equipment, benches and tools, for a 20 bench centre would cost, at prices we have been paying, about \$400.00. The fitting of the room with cupboards, general tool racks, etc., would cost about \$300.00, per room. Sometimes that cost of \$300.00 per room has been exceeded when it has included the cleaning up and painting of the room.

One teacher can take charge of a single 20 bench centre suitable for twenty boys. Taking twenty different boys every half-day permits the centre to deal with two hundred boys per week.

The following is the list of tools that have been provided :

FOR THE ROOM.

5 Smooth Planes.	1 Flat Plyer, 5 in.
3 Fore Planes.	1 Round Plyer.
8 Round Head Mallets.	2 Oil Cans.
1 Draw Knife.	2 Centre Bits, each $\frac{1}{4}$, $\frac{3}{8}$, $\frac{1}{2}$, $\frac{3}{4}$, 1 , $1\frac{1}{2}$.
1 Mitre Box.	1 Auger Bit, each $\frac{1}{4}$, $\frac{3}{8}$, $\frac{1}{2}$, $\frac{3}{4}$, 1 and $1\frac{1}{2}$.
2 Try Squares.	4 Drill Bits.
4 File Cards.	2 Screw Driver Bits.
8 Screw Drivers, small.	2 Wood Counter-Sinks.
2 Screw Drivers, large.	1 Iron Counter-Sink.
1 "T" Square, each 4 in. and 5 in.	5 Oil Stones.
8 Flat Files, 8 in.	1 Rabbit Plane.
8 One-half Round Files, 3 in.	10 Hammers.
2 S.T. Files, 4 in., and one handle.	2 Firmer Gouges, each $\frac{1}{4}$, $\frac{3}{8}$, bev. inside.
2 Flat Files and one handle.	2 Firmer Gouges, each $\frac{1}{2}$, 1 , $1\frac{1}{2}$.
4 Bit Braces.	2 Mortice Chisels, each $\frac{1}{4}$ and $\frac{3}{8}$.
5 Bevels.	2 Chisels, $1/16$.
5 Nail Sets.	4 Firmer Chisels.
8 Wood Spoke Shaves.	2 Hatchets.
4 Hand Screws.	1 Pad Saw.
10 Brad Awls, assorted handles.	1 Grind Stone.
2 Doz. Brad Awls, not handled.	4 Rip Saws and 4 Cross Cut Saws.
2 Slips for Gouges.	6 S. P. Corks.
8 Scrapers.	2 Spg. Dividers.
4 Mort. Gouges.	3 Cutting Gouges.
4 Wing Dividers, 5 in.	5 Gimlets.
4 Pincers.	1 Tool Grinder.
1 Cutting Plyer, 5 in.	2 Bent Gouges, 15 each $\frac{1}{4}$ and 1 .
	2 Blackboard Compasses.

FOR THE BENCH.

1 Rule.	1 Bench Hook.
1 Drawing Rule.	1 Pencil Compass.
1 Sloyd Knife.	1 Back Saw.
1 Gauge.	1 Marking Awl.
1 Try Square.	1 Drawing Kit.
1 Jack Plane.	1 Brush and Hook.
1 Firmer Chisel, each $\frac{1}{4}$, $\frac{1}{2}$, 1 .	

Under the MacDonald system, I may say here, the boys have one session each a week, lasting the whole forenoon or afternoon; the girls of the corresponding classes in Brockville during these periods taking under the regular teachers, sewing, knitting, and cutting out, and listening to talks on Domestic Science. In the opinion of Mr. Robert Meade, P. S. I. of Brockville, from whom I have learned these particulars, the sessions are too long and much better results would be obtained if each pupil had two, each 1½ hours long. By the present plan, the pupil is completely tired out bodily and mentally. Besides, the sessions are so far apart that he has forgotten much of his previous lesson and his interest in his last piece of work has been gradually fading away. In Mr. Meade's estimation, the "Centre" system is to blame for this. In the elementary schools I saw in the United States, the time given to Manual Training varied from an hour once a fortnight to three hours or four hours and a half a week, the latter provision being regarded as the best one.

Nor, in counting the cost, can we ignore the important fact that very few of our Schools have accommodation to spare, and the equally important fact that the cost of the present system is, in most localities, as great as the taxpayer is prepared to meet, until, at least, this subject is more generally understood. And, further, I can think of almost no High School in Ontario, and this is true, I believe, of the Public Schools as well, which, to do full justice to both the staff and the pupils, does not need additional teaching power for the existing courses. Many of our classes are far too large, and many of our teachers are sadly overworked. We must be prepared to do a good deal more than simply add the new subjects to the programme.

(2). As to the lack of competent teachers. Notwithstanding the provision for training teachers that has been made in the United States, this is still a serious obstacle there, and for some years it will be a very serious obstacle in Ontario. The Hamilton and Toronto Schools of Domestic Art with their Normal classes are fortunately ready to hand. All that is needed is the demand. But, for Manual Training, no similar provision has yet appeared. Kingston had to import a teacher from the United States at a salary which few boards would care to pay, and the MacDonald Schools are manned by teachers from England. True, the latter schools provide instruction for the teachers of the locality, and a summer school was opened last year; but is the product of such classes likely to be satisfactory in view of the fact that the courses in the United States schools take at least one year, and oftener two? This phase of the question is a most important one. All the educationalists I have met are unanimous on this point. Mr. R. M. Smith, Supervisor of Manual Training in Chicago, has made a special study of this subject, expresses an emphatic opinion. "Manual Training stands or falls with the character of its representative. I should recommend great care be taken in its introduction, otherwise we shall bring the new branch into disrepute, and, when a thing of this kind is tried in a community with failure as a result, it is very hard to reinstate it in the minds of the people." As to technical evening classes: only in the University centres—Toronto and Kingston—could competent teachers be secured without, as in Germany, drawing upon the staffs of the High Schools or Public Schools. But, as matters stand, it would be unreasonable to expect our teachers to do the work of the evening classes in addition to the work of the day school. To do so would be to sacrifice their own health or the interests of both classes of schools. A special grant to School Boards concerned might overcome the difficulty by enabling them to increase their staffs and thus relieve one or more of part of their day duties.

RECOMMENDATIONS.

In order to assist in overcoming these obstacles, I beg leave to recommend as follows:—

(1) The Education Department should take steps to provide a supply of competent teachers. The expert mechanic as I have already pointed out will not suit. The industrial side of the question is important, but the educational side is more so, and, even for the technical departments, we need the trained teacher. The difficulty may be tided over for a year or so by importing foreign teachers; but we must look to Ontario for a permanent and effective supply. All our teachers must be "to the manner born." From the nature of sewing, it may form part of the course in our Normal Schools, and before long

in our remodelled Model Schools. As to cooking, it should at first be an optional course in the Hamilton Normal College. The Ontario Normal School of Domestic Science and Art is available. All that is needed is a departmental regulation to set the machinery in motion. In Toronto we have also the Victor School, and, no doubt, before long, facilities of a similar nature will be available in London and Ottawa. These cities cannot lag behind, even if no action is taken in the matter by the Education Department. In this way eventually provision can be made for all the Normal Schools as well, even if the Education Department itself does not act. Under present conditions, a Normal course of four or five months may have an educational value; but it is insufficient preparation for teaching. For a time, the Normal College would, I believe, produce a sufficient supply. As to manual training; for some years, the demand for teachers will be small. If an arrangement were made for the establishment of a Manual Training Department in the Hamilton Normal College (which might also be a city Public School centre), our requirements would be met for some years at any rate.

Provision in our professional courses is an absolute necessity. The first step in Sweden was to make manual training a part of the Normal School courses. There is no State system in the United States; but this was also the recommendation of the Massachusetts State Commission appointed in 1891, "to investigate the existing system of Manual Training and Industrial Education." And, as has been shown, such provision exists in some of the Normal Schools.

(2) In view of the importance of Domestic Science and Art, and of Manual Training with its technical extensions, the Legislature should, for a time, stimulate their introduction by a special grant, proportioned in each case to the magnitude of the undertaking, and limited only by its liberality and a due regard for other departments. The MacDonald Schools are to be maintained for three years. The Legislature of Ontario might fairly give its special grants for that time at least. Afterwards any sum voted should be apportioned on the same bases as is the present legislative grant—on the character of the accommodations, the value of the equipment, the average attendance, and the amount of the salaries paid the special teachers. The percentage at first allowed might be larger than that given under the scheme for distributing the present grant; but it should be gradually reduced as the subjects commended themselves to the people, until Manual Training and Domestic Science and Art are placed where they should be—on the same footing as the other departments of school work. Only special considerations can justify special grants. The utilitarian value of sewing and cooking will, no doubt, commend them before long to most School Boards; but with Manual Training, the case is different. As to the Technical evening classes I have already suggested a special grant.

For all such grants we have a precedent. For some years, under the late Chief Superintendent, when Latin became an optional subject in the High Schools—the remodelled Grammar Schools—Collegiate Institutes were created with a special grant to each of \$750, over and above its share of the ordinary High School grant. It was feared that otherwise classical culture in Ontario might decline. Before long, however, this fear was found to be groundless and the special sum voted was then added to the ordinary High School grant. The first step in this direction has been already taken by the Legislature. All that is now needed is an increase of the grant, proportioned to the necessities of the situation.

PART II.—HIGH SCHOOL COURSES OF STUDY.

When discussing the obstacles to the introduction of manual training and domestic art into our schools, I stated that some are the result of our present organization. As a matter of fact the evils that cause these obstacles ought to be dealt with on broader grounds. They are of long standing; and, though the influence of some of them is much less than it was over fifteen years ago, we can have no satisfactory system of education in this Province until they have been removed or reduced. Our examinations are so intimately connected with our courses of study that they cannot be discussed separately; nor can certain other considerations which affect both be left out of account. This part of my report will, accordingly, deal with the whole situation so far as it bears upon the work done in our High Schools.

THE CAUSES OF THE EVILS.

Most of the evils we suffer from may, I believe, in the final analysis, be traced to two main causes:

A. The excessive pressure of examinations and courses;

B. The excessive unification of examinations and courses.

To prevent misapprehension, let me say at the outset that, when the teacher's reputation is established and when he is reasonably secure in his position, he can afford to ignore and he does ignore many of the influences which injure education; and that there are many school boards which consider only the real educational well-being of their schools; but there are few, if any, localities in Ontario where the evils I am about to point out do not exist to a greater or less extent.

THE EXCESSIVE PRESSURE OF EXAMINATIONS AND COURSES.

The case for and against an examination system has been threshed out again and again. It is unnecessary to present it here; but I must deal with the two leading objections; for they are the prominent ones in Ontario:

(1) The prospect of an examination held by outside examiners turns the pupil's and the teacher's attention from the subject to the examination. The subject acquires a significance not belonging to itself, and a wrong ideal of education is set up for the pupil, the teacher, the trustee, and the general public. I was struck with this fact most forcibly last fall. As soon as I crossed the bridge at Niagara, although in a State with a system of examinations (the Regents' Examinations of the University of the State of New York), I found myself in a wholly different educational atmosphere. Nowhere, not even in the State of New York, had I any reason to suspect that examinations by outside authorities exercised any influence. Each school is its own examiner, and I nowhere heard the examination question referred to: I had always to ask about it. The questions discussed there are what is the best kind of education to give and how best shall it be given. In Ontario, on the other hand, I hear more in our schools about examinations than I do about anything else. No part of our system can claim that it is free from this influence—neither the Public School with its form examinations leading up to the departmental High School Entrance and the Leaving examination; nor the High School with its Junior and Senior Leaving examinations in four parts and its Commercial and special Matriculation examinations; nor the Provincial University with its Matriculation and its four Annual examinations, until lately conducted by outside examiners. I am not putting the case too strongly when I say that, throughout our system, the examination forms the woof of almost all educational effort.

It is proper, however, to state here that an effective use has been made of this influence for beneficent purposes—to stimulate both the teacher and the pupil and to direct their efforts into proper channels. The stimulation and the general improvement of the teaching are undoubted; but the stimulation and the interference have both been proved to be excessive.

(2) Under an examination system, that counts most on which examination questions can be put. The greater the pressure, the greater the evil. That our examinations do interfere seriously with proper teaching, no one who has any knowledge of our system can doubt.

One or two illustrations may, however, be given. It is impossible to hold an oral examination in the languages at the different centres. The consequence is that, in many of our schools, little attention is paid to the pronunciation, and in many places, indeed, almost none. I have heard pupils who have been two or three or even four years at French and German, for example, make about as many blunders and read with as little fluency as a pupil who had been at the subject only a few months. And as for Latin and Greek, very seldom does one hear a pupil read with fluency and due regard for quantity. But it is not fair to blame the teacher for this. The pupil takes little or no interest in the subject; it doesn't pay at his examinations; and he looks on it as a matter of minor importance. As for the teacher, the usual explanation of the neglect is that he hasn't the time; he is oppressed with a course in translation, grammar, and composition that must be completed before July.

Or, to take the case of a whole subject. The regulations prescribe the amount of time to be given each week in a High School to physical culture and reading. No part of my duties has given me more trouble than this. For years, in some places, it seemed to be impossible to have this very necessary regulation complied with. Even now it is only in the Collegiate Institutes—and in not all of them—that suitable provision is made for physical training, and I have still occasional difficulty with the reading regulations. If, in the arrangement of the time table, anything has to suffer, it is the reading or the drill. Neither now counts at the examination, and when reading did, it had little importance. In order to give prominence to reading, the High School Inspectors have for years made a point of examining the last class of entrants and the other pupils who take the subject. The statement below gives the results of my own last examination of all the schools in the Province with one or two exceptions. It represents the results of ten years of strenuous effort; and, as will be seen, it still leaves much to be desired. In the entrance classes I have examined on a simple "unseen" passage, and all I have expected from them has been clear articulation and fair intelligence; in the case of the other pupils, I have examined them on the work done in the class, and I have consequently set a higher standard. In a numerical valuation, "good" means 50 per cent. and over, "fair," between 35 and 50 per cent.; "poor," between 25 and 35 per cent., and "bad," below 25 per cent.; the last class should have been in the third book:

I. Last Class of Entrants (1899 and 1900.)

	Collegiate Institutes.	High Schools.	Total.
Good	560	471	1,031
Fair	804	735	1,539
Poor	641	735	1,379
Bad	92	142	234
	2,100	2,083	4,183

II. Other Pupils.

	Collegiate Institutes.	High Schools.	Total.
Good	430	388	818
Fair	665	671	1,336
Poor	564	814	1,378
Bad	37	101	138
	1,696	1,974	3,670

In explanation, I must add that in the case of Table I, 16 Collegiate Institutes and 76 High Schools had fewer than 10 in the "good" class, and 3 Collegiate Institutes and 43 High Schools fewer than 5; and in the case of Table II only 21 of the Collegiate Institutes and 8 of the High Schools had 10 and over, and 5 of the Collegiate Institutes and 53 of the High Schools had fewer than 5. Only 25, indeed, of all had a really good record. It is fair to add, however, that, owing to the dates of my visits the above statement unduly favors the entrance classes, many of whom had been six months and over under the High School teacher; and it is unduly unfavorable to the other pupils, many of whom had been less than a year and a half in the High Schools. The statement must be viewed in the light of these facts.

Frequently, too, I have asked the last class of entrants how often they had reading the year before they left the public school. Usually they have had no or almost no practice in oral reading, and in extremely few cases had a proper amount of time been given the subject. All the time had gone for the written examination subjects.

English composition, too, has suffered in the same way. Comparatively few are usually rejected at the departmental examinations in this subject, and partly for this reason and partly owing to the pressure of the other subjects in which the examination standard is higher, the attention generally given to this, in my judgment, the most im-

portant subject on the programme, is quite incommensurate with its usefulness and its value as culture.

To take an illustration of another kind: To secure the proper study of botany, the most important part of the examination was made practical, and, as all that could be expected from junior candidates was the description and classification of a plant. These were for years the staple subjects of study. Most pupils who have taken Botany in Form I only, have left school with the idea that its chief end is to be able to hunt out the name of a plant in the Flora, and the difficulty of the terminology has made a more lasting impression upon them than anything else. Since the abolition of the examination, far better and far more enjoyable work in botany has been done, notwithstanding the drawbacks of the general situation. The reign of the Flora and the Schedule is over.

However admirably our questions may be put—and our questions compare most favorably with those of any other country—the examination destroys the symmetry of our courses by giving an adventitious importance to some parts and detracting from the due importance of others. Besides, there are elements of culture—the highest, indeed—which the examinations cannot reach. We may examine a boy, for example, on the meaning and the literary qualities of one of Tennyson's poems; but no questions can discover whether it has entered into his inner life. The best literature defies every attack of the examiner's scalpel.

The general evils I have been dealing with would exist under any examination system. My experience leads me to believe that there are also other evils indigenous to Ontario. Our system is practically a competitive one amongst schools. The initial impetus came from the Intermediate over twenty years ago, when the legislative grant was distributed on its results. During this period there was a fierce scramble for pupils, for a large annual grant meant more money to a school. After a time the grant was distributed on another basis; but the evils of the former system did not disappear. On the contrary they were kept alive and reinforced by the continued prominence given the examinations. The annual publication of the results in the Toronto dailies with the ensuing local comments and comparisons based thereon, have much to answer for. Unfortunately, the feature of our schools which should be kept in the background has been exploited and the consequences have been serious. Some of them I must point out:

(1) Boards of Trustees and the general public have been educated to regard a large attendance and success at the examinations as the proof of the teacher's competency and the school's efficiency. For years, in many localities, the attendance was congested, being swollen by numbers attracted by the examination successes. Boards were put to expense to maintain establishments which their necessities did not justify and for which the localities themselves got no adequate return. Of late years the situation has improved; for, owing to the general progress of the schools, candidates are seldom compelled to leave their own counties. But the evil still exists everywhere to a greater or less extent. Boards still attach special importance to a large attendance.

Frequently, too, when, owing to an excessive attendance I have had to report that an addition to the staff was absolutely indispensable if justice was to be done to all concerned, I have been confronted with the examination record. The Greek pedant, when he wanted to sell his house, carried around with him a specimen brick to show to possible purchasers. He yet lives and walks this Province in modern guise. It is by no means uncommon either for Boards to require and teachers to present an analysis of the examination results, showing how many have failed in the subjects taught by each member of the staff. At the present moment, indeed, I have such a statement before me, prepared on last year's results, to show a Board the relative merits of the different teachers and sent to me for a similar purpose. Even if the examination were what it most emphatically is not—the most reliable test of the teacher's efficiency, the moral aspect of the whole affair is most objectionable. Success at an examination year after year is a proof, not the proof, of a teacher's efficiency. The success is due at least as much to the character of the attendance as it is to the competency of the teacher. No sane man would base a claim for the superiority of the Collegiate Institutes of Toronto, for example, on the ground that the number of examination successes scored by them is larger than those by schools in the other cities of the Province. Besides, there are moral

elements in education, which the examination is powerless to test and in comparison with which the petty triumphs of the examinations are utterly insignificant.

(2) Many High Schools attempt more courses than their staffs can undertake with justice to all concerned. I have visited some with only two teachers in which the work of all the forms was attempted, with almost all the options; and there are few, if any, of the schools that do no suffer in this way. This means, of course, work after hours for both teacher and pupil, not to speak of the necessary neglect of the junior classes and of the individual pupil. Nor is this evil confined to the High Schools. I am, indeed, much mistaken if the teacher of the Continuation Class, with his candidates for the High School Entrance and the Public School Leaving, and, it may be, for the Junior Leaving, could not also "a tale unfold."

(3) The desire to stand well at the examinations has led to too much teaching and to too little independent effort on the part of the pupil. The latter does not believe that full justice is being done him unless he is in class all the time, and the teacher feels uncomfortable unless he is. The pupil too often resorts to the teacher for the solution of his difficulties when he should solve them himself; and the teacher, against his better judgment, often succumbs to the exigencies of the situation. Besides, the situation is sometimes such that he cannot resist. I have known teachers to be looked upon as inefficient for reasons that actually demonstrated their efficiency. This emphasis of the examination has brought with it a train of other evils—a reduction of the length of class periods, too rapid advancement in the forms, too great reliance upon the text-book, the so-called "School Helps," over-annotated text-books, the too general use of "cribs," too hurried preparation, a distaste for study and so on.

(4) The examination pressure is increased by the number of the subjects—by what is often called the "multiplicity" of subjects. As usually understood, this means that there are too many subjects in our School curriculum. And yet, there are few, if any, that our critics would agree to omit. It is far easier to name subjects which modern conditions would justify us in inserting than to name those which can be fairly left off. But there is a sense in which the objection has force. The options are numerous, and the programme for some of the forms might fairly be reduced. The difficulties of the situation are, however, due not so much to the excessive number of subjects in the forms, as to the examination pressure on all or nearly all of them. Some of minor importance are magnified out of all proportion to the educational value. With the examinations in view the teacher has to keep all of them going. His own zeal and the pupil's anxiety practically force him.

(5) About twenty-five years ago, the legislative grant was apportioned on the attendance in Latin. The result was that almost every pupil was put into Latin. Although the cause is different, the present situation is practically the same. Very many pupils on entering do not know what their future occupation will be, or how long they will remain at the High School. As Latin is obligatory for Matriculation, and for the Leaving examinations, and as, with few exceptions, all take these examinations who reach the stage, the teacher naturally enough advises such pupils to take Latin. But many of them for various reasons, drop out of School after a year or so.

Many again have at first great plans and take up all the examination subjects, but drop Latin when difficulties begin to develop. When, too, some who enter intending to remain only a short time, in the end take a complete course, it is easy to see how embarrassing the teacher's position is. With his organization in view, he very properly desires all pupils who may need Latin to take it in Form I. As French, German, and Greek are also options for the Leaving examination, the languages have thus assumed an adventitious importance. The following tables bear out my contention. Table I. shows the number taking the languages, and Table II. the number reaching the examination stages, with the total and the form attendance. Table I. shows a falling off in attendance in Forms I. and II., especially in Form I., due, I may say, to the Continuation Classes. Many pupils now remain in the Public Schools for a year or so after passing the High School Entrance examination. This, of course, intensifies the evil in the High School; for they come either, knowing no Latin or having learned it badly. As a result, the organization of the Form II. and Form III. Latin classes is, in many schools, very defective for a good part of the year.

I. *Statement of the attendances, 1890-1900*

Year.	Total.	Form I.	Form II.	Form III.	Form IV.	Latin.	Greek.	French.	German.
1890	22,460	8,407	6,912	5,701	1,440	19,131	1,176	13,464	5,513
1891	23,301	9,367	7,101	5,300	1,533	19,313	1,466	13,866	6,288
1892	24,380	10,136	7,262	5,363	1,629	16,873	1,421	13,761	5,169
1893	24,567	10,191	7,466	5,232	1,678	15,526	1,458	13,374	4,563
1894	24,662	9,742	7,822	5,535	1,563	12,587	1,419	11,866	3,464
1895	23,523	8,852	8,313	4,900	1,458	9,366	1,080	10,530	2,785
1896	23,055	9,274	8,071	4,435	1,275	8,918	1,008	10,482	2,851
1897	22,837	10,820	7,607	3,370	1,040	9,906	1,070	10,398	2,796
1898	22,230	17,348	3,883	946	53	8,488	1,087	9,319	2,311
1899	19,395	14,950	3,588	772	86	7,114	1,071	7,837	2,212

II. *Statement of the Examination Results.*

	Second Class.		First Class.	
	No. of Candidates.	Passed.	No. of Candidates.	Passed.
1890	1,427	745	248	91
1891	1,518	969	188	109
1892	1,710	1,008	248	134
1893	1,701	807	343	155
1894	1,723	909	591	145
1895	2,198	1,107	637	175
1896	2,615	1,147	540	302
1897	3,260	1,725	691	312

	Junior Leaving.		Senior Leaving.		
	No. of Candidates.	Passed.	No. of Candidates.	Passed.	
				Full Form IV.	Part I. Form IV. Part II. Form IV.
1897	3,000	1,920	977	354	155 148
1898	2,373	1,147	704	83	106 75
1899	2,479	1,344	774	147	219 89
1900	2,224	1,506	834	...	436 408

In 1900 when a candidate took the whole Senior Leaving, and was successful, two certificates, viz., one for each Part, were issued in each case. Of course, many took only one of the parts.

Latin became obligatory in 1896, but as the former regulations remained in force the full effect has not yet been apparent. It is only in 1899, when, indeed about 50 still wrote under them, that we can form a proper idea of what it will be. Before 1896 Latin was an option; French and German have always been options, and Greek has been one for many years. Further on I will deal with this subject again; but, without going into details, I wish to point out here that, whereas in 1890, out of a total attendance of 19,395, only 7,114 were in Latin (then an option), in 1899 the number in Latin rose to 19,131 out of a total of 22,460. In view of the educational necessities of this Province and the fact, shewn by Table II., (adding about 100 for those who took the honor and scholarship examinations) that, of those who begin High School work, only about 16 per cent. reach the very humble standard of the Junior Leaving, no one surely will justify the present situation.

But the educational side of this question is not the only one to consider. In some places the High Schools are not so popular as they should be. Strong objection is taken

to pupils being put into Latin. This objection is, I believe, one cause of the antagonism which the High School sometimes encounters. The situation is the result of the obligatory Latin, and the Education Department gets the blame.

THE EXCESSIVE UNIFICATION OF COURSES AND EXAMINATIONS.

The dominating courses and examinations have been those for University Matriculation. The University authorities are, nevertheless, dissatisfied; and, as a result of the assimilation, other important interests have suffered.

(1) In this connection it will be well to state generally what the situation is. A good many years ago, educationalists held that the training of the mind should be the only consideration in constructing a curriculum. At one time, indeed, not even book-keeping had a place on our High School programme. This theory few now hold. The necessity for recognizing the practical soon forced itself into prominence. Discussing this subject, Huxley expresses himself thus in one of his addresses: "If a man has to sharpen his teeth, he had better do it on good bread and cheese than on shorts." There is no reason, indeed, why we should not secure both culture and the practical in our schemes of primary and secondary education. This being conceded, our High School courses would have the following in view:

(1) General culture, (2) commerce, (3) agriculture, (4) the industries (5) university matriculation, (6) preliminary professional examinations, (7) teachers' non-professional examinations.

Ample—some think, too ample—provision has been made for university matriculation and the preliminary professional examinations. As these courses have been unified and have been the Procrustean bed on which most of the others have been stretched, they have comparatively few defects. But in the pressure of assimilation to the matriculation courses, the interests of the public schools have suffered. For the industries and for the development of the creative faculties, as I have shown in part II., practically no provision has yet been made. For commercial pursuits, on the other hand, the provision is ample—too ample, indeed—for, as bookkeeping is an obligatory subject, many are forced to take it for whom a year's course is comparatively valueless. In a month or so—in connection with arithmetic, it may be,—the ordinary pupil can acquire all the knowledge of commercial transactions he will ever need. Agriculture has a place on our programme; but I know of only one high school in which it has been taken up, and then only in winter for half an hour or so a week. The regulation making the provision is a dead letter. Besides, the courses in physics, chemistry and biology are the university courses; they have no relation to agriculture, nor have they any other practical application. A general course is recognized in our scheme, but it has been squeezed out by the others and by the examinations. Many people, I find, do not even know of its existence. This course is also, to some extent, a part of the unified scheme, and is controlled by the same considerations.

(2) We have two sets of examinations, (a) the junior and the senior leaving (including matriculation), the preliminary professional examinations, and the examinations for teachers' certificates—all more or less unified; and (b) the commercial diploma examination, part I. of which is unified with part of the junior leaving. This unification has been attended with evils. Under it, the examiners, it is well known, have always experienced great difficulty when they have attempted to recognize the claims of the different interests involved. At the junior leaving, in particular, circumstances, for a time, led them to consider chiefly the interests of the teachers, to the disadvantage, it is held, of the matriculant. Of late, however, the interests of the matriculant have been dominant, to the undoubted disadvantage of the teaching profession. Until lately, too, the pass percentage for all candidates was the same; and, although the teacher has now to make a percentage of the total, his preparation is still too meagre for his duties. Even supposing that the same courses and the same grade of question were suitable for all who take the junior leaving, the allowance that should be made for the matriculant should not be made for the teacher. The matriculant should be required to show simply that he is able to go on with his undergraduate work. Being young he is mentally immature, and he should have the benefit of every doubt. It is different with the teacher: he should at least show that he knows the subjects of the public school courses well enough to teach

them. He should be older and more mature, and the public interests do not justify extending to him the same consideration as to the matriculant. In the matter of the commercial diploma also, the requirements of different places are different. The standard and the courses that suit the larger city are often unsuitable for the village or country town.

The High School Entrance examination affords us another example of the effects of the unification idea. Instituted at first solely to test the competency of the pupil to begin his work in the High school, it has gradually become an examination for testing the efficiency of the Public schools, and it is even yet used as a final examination for pupils of a lower grade than those who take the regular Public School Leaving examinations. Experience has, I believe, demonstrated the fact that it has suited neither class of candidates. Subjects are prescribed for the entrant and emphasized by the examination that are unimportant for his subsequent courses; and the examination standard has usually been too high for him and too low for the Public School Leaving candidate.

PROPOSED AMENDMENTS.

I have now pointed out what seem to me to be the leading general defects of our present organization. Before suggesting amendments, I desire to express my conviction that, notwithstanding the serious defects which have grown out of the excessive pressure and unification of courses and examinations, we owe the wonderful growth of our High school system more to them than to almost any other cause. No one who knows the condition of our schools twenty years ago can doubt this. Then the professions and the universities held each its own matriculation examination with, in most cases, different requirements, all again differing from those for teachers' certificates. Under these conditions there could be no proper economy of the teaching force, and effective organization was an impossibility. The examination system has done still more. It has provided a stimulus which, under the resulting competition amongst the High schools, has forced Boards to provide better and better paid teachers, better equipment, and, to some extent, better accommodations. It has improved the character of the teaching in both the Public and the High Schools, stimulated both pupils and teachers to greater diligence and zeal; and, while it has put more responsibility on the teacher, it has aided him in his discipline by providing his pupils with an incentive to study. No more effective means could have been devised to remove the grave and far reaching evils which existed before the Intermediate was established. But, as with everything else in this present evil world, the evil is mingled with the good. Unification has been carried too far, and the pressure has proved to be excessive. But few would advocate the complete abolition of our matriculation examinations or the segregation of our courses of study. So far as my knowledge goes, neither the teachers nor the general public, as a body, desire such a change. While they recognize the defects of our examination system, they have realized its advantages. It must be remembered also that the present temper of our people is the growth of nearly a quarter of a century, and that conditions have been adapted to our existing scheme. Whatever the future may have in store for us, a sudden reversal of policy could not fail to bring with it certain confusion and possible disaster. For economic reasons, if for no others, we need unification of courses and a system of examinations, so far as these can be secured without degrading educational ideals, or sacrificing the interests of pupils, teachers, or the general public. We cannot abolish examinations at present; for my part I do not think it would be well to abolish them under any circumstances; but we may reduce their number and their importance.

I submit, accordingly, for the consideration of the Education Department, the following suggestions for the modification of the regulations when next they are amended:

EXAMINATIONS.

(1) The examinations should be held only for absolutely necessary and specific purposes. Under this condition, we should have in our High School system, only three examinations controlled by the Education Department: the entrance and the two teachers' non-professional examinations on the subjects of the two highest forms. I have described these as absolutely necessary. The time has not yet come, if it ever does come, when a

graduation diploma issued by either a High or a Public School Principal can be accepted in full. It is a necessity of the situation that the academic preparation of our Public School teachers should be done in our High Schools; but, if proper precautions are taken, no disadvantage can result to the other pupils. The work is academic and can be made to suit more than the one class. From one point of view, it might be better if the teacher's non-professional examination were held when he presented himself for admission to the training school. The immediate examination pressure on our High Schools would be less. But the regular matriculation examination, which was once held just before the Universities opened in the fall, is now held at the close of the school session, so that the matriculant shall not have to lag at his studies during the hot months of summer and may have a needed opportunity to recruit his energies for the arduous duties of his University course. This is a wise provision, and the teacher needs it as much as the matriculant.

Under this proposed reduction of our departmental examinations, the first that would affect the High Schools would be held at the end of the present Form III; and, in this way, for three years at least, the teacher and the ordinary pupil would be free from the direct influence of the outside examiner. This involves, of course, the abolition of Junior Leaving, Part I. It seems to me unnecessary to discuss the propriety of this change. The examination has shown itself to be an unnecessary interference with High School work; and, as a Public School Leaving examination, it is an inadequate test; for it covers only some of the subjects of Form V. and has led to the neglect of the others. This is recognized to be the fact from Windsor to Williamstown.

The proposal involves also the abolition of the departmental commercial examination and of the departmental commercial and leaving diplomas. The business requirements of different localities and the capabilities of their schools differ among themselves. The question of a commercial examination and of a diploma should be left to the local Boards; for such diplomas can have at best but a local value. Some years ago Galt held its own examination on its own course and awarded its own commercial diploma, much to the advantage of all concerned. But this feature of the school disappeared under the pressure of attendance and the departmental examinations. As to leaving diplomas: If Boards wish to make the results of the matriculation and the teachers' non-professional examinations the basis or part of the basis of their award, well and good; the responsibility will be theirs. But they will have the power to take into account other important considerations which under a general system cannot be recognized. It will also be at their option to make their awards wholly on the examinations and other tests of their own staffs. For the last three years, indeed, the Toronto Collegiate Institutes have given their own graduation diplomas, taking into account other elements besides the results of the departmental examinations, and granting them to pupils who have passed neither the Junior nor the Senior Leaving examination. This practice should become general, and the Department can make it so by abolishing its present diploma certificates. In time, the diplomas granted by Boards may acquire a current value, and we may gradually reach the much-to-be-desired condition in which departmental control will be a far less important factor than it now is. With the diplomas would also disappear the names junior and senior leaving. These examinations should be conducted to suit the requirements of the Public Schools alone. This change and the omission of the languages at the first examination would direct elsewhere the zeal of the language masters, and so reduce the very great importance now attached to the teachers' examination. The Universities would control their own matriculation, using, as now, the machinery of the Education Department. The Medical Council, the Law Society, and other such bodies would select the courses and papers that suited them, prescribe their own standards, and receive such consideration in the way of special papers as the necessities of each case might justify.

(2) As I have already said, it is not now possible to abolish the examinations held by an outside board. In moderation, they are a means of stimulating work and of keeping in hand the general character of the teaching. We may, however, accept the teachers' certificate of the candidate's competency in certain subjects which do not lend themselves so readily to examination by an outsider, or the examination in which leads to a lopsided course of instruction. This reform would do much to improve the character of the teaching as well as to reduce the examination pressure. The proposal, as will be seen further on, may be readily applied in the case of the High School Entrance and Teachers non-

professional examinations. Here I may say that, so far as the Entrance examination is concerned, all the subjects are reviewed in the High School, and, in the case of the Teachers', they should be reviewed in the training schools. Indeed, many educationalists in Ontario have long been of the opinion that the practical divorcement of the professional from the non professional side of the teachers' preparation has been carried too far; and that instruction in methodology should always be accompanied by a thorough review of the academic subjects. So far as the reading, drawing, book-keeping and botany of Forms I. and II. are concerned, the certificate of the Principal and the Chairman of the school Board is now accepted in lieu of a departmental examination. Under the operation of this regulation, the general character of the work has improved very greatly, and the relief thus afforded has been a boon to both pupils and teachers.

I am well aware that there are difficulties connected with the proposal to accept the teacher's certificate for part of the examination, and former experiments in this direction have, it must be admitted, not been encouraging. Then, however, the other conditions were unfavorable. Part of the present scheme is to make them more favorable. Under any conditions, this responsibility would, no doubt, be an onerous one for the teacher. He might be subjected to pressure from the parents and the friends of the pupils, and he might fear the result. There is force in this. But we have to choose between two evils, the greater by far being the inordinate pressure with its concomitant evils, under which every part of our school system now labors. One of the comforts of the examination by outside authority is that it relieves the teacher of responsibility; but there is reason to fear that this relief has not fostered independence of character and a strong sense of duty. It is high time we changed all this. Our teachers should all represent the highest type of manliness. A certain rich Greek once asked Aristippus how much he would charge to educate his son. Aristippus wanted ten talents. "But," said the rich man, "I could buy a slave for less." "Buy one," replied the philosopher, "and then you will have two."

But, in one way, the teacher's hands may be strengthened. A departmental regulation should forbid the admission of any pupil from another school who does not hold a letter of honourable dismissal from his former principal. It is by no means uncommon for a pupil who is dissatisfied for any reason, to go or to threaten to go, to an adjacent school, where sometimes he is admitted without due consideration of the circumstances.

There is, however, another side of this question of accepting the teacher's certificate. There must be a reasonable guarantee that the subjects for which the teacher's certificate is taken are properly attended to. Under even a slight pressure the non-examination subject might, for a time at least, go to the wall. The minimum amount of time to be given should be prescribed as now in the case of reading and drill, etc.; and, as now, the principal and the chairman of the board should be required to certify to the observance of the regulation. No reduction of the prescribed time should be allowed without the consent of the Education Department on the report of the High School Inspectors, and the certificate should invariably be exacted. No reasonable man could object to this.

(3) At all the examinations—the Entrance, the Public School Leaving, the Matriculation, and the Teachers' non-professional—the teacher's confidential estimate should be a factor in determining the results. In any general system it is difficult to recognize this; but the difficulties are, in no case, wholly unsurmountable. The High School Entrance and the Matriculation are only promotion examinations when held for their proper purposes. Both pupil and teacher should look forward to them with absolute certainty that all proper allowances would be made, and that no fairly prepared candidate would be rejected. At the High School Entrance the difficulties inseparable from a scheme in which the "personal equation" of the teacher has a share would be less than in the case of the matriculant; for the Public School Inspector who must have at least some knowledge of the value of the teacher's opinion, is a member of the Board, and the Board itself is in a better position to deal with each case on its merits. This reform alone would do much to relieve the present pressure on both the pupil and the teacher of the Public Schools. True, the standard might not be absolutely uniform all over the Province and there might be cases of personal favoritism as well as of poor judgment. But these defects—if, indeed, the first is a defect (which, I doubt)—would be far outweighed by the resulting gain to education. Less consideration should, I believe, be shown at

the Teachers' non-professional examinations. Here the candidate should display some maturity of judgment as well as due competency to teach the subjects of the Public School programme. For him, in many cases, his first examination is his last. For the High School entrant or the matriculant, it is only a step in a course which is not yet complete.

(1) The standard for the teachers' examination should be raised to 40 per cent on each paper and 60 per cent. of the total on a curriculum and examinations made out to suit the requirements of Public School education, and the answers should be read by examiners who keep this object solely in view. Until recently when 50 per cent. of the total has been required for teachers, the standards of the University have been dominant at both the Matriculation and the Teachers' examinations. For various reasons, this has been too low - too low even for the universities themselves, and lower than is justified by the capabilities of the schools. The preparation of the Public School teacher for his duties has also suffered; for the standard has been insufficient for the requirements of most of our Public Schools. This, combined with the low standard set by the Model School Boards, has produced so large a supply that, in many rural sections, salaries have been reduced, and the schools are in the hands of mere youths who have no intention of remaining in the profession.

During the last fifteen years, the accommodations of our Public Schools have been greatly improved, far better methods of teaching have been introduced, and far better results have followed; but it cannot be denied that Public School education as a whole has not advanced commensurately with the advancement of other parts of the system. No doubt other causes have operated, but the immaturity and the inferior qualifications of the lowest grade of teachers have been a prime factor in the result. So long as most of teachers are women and so long as other available avenues offer greater inducements to men, the existing evils can never be wholly eradicated; but the present condition of affairs may be greatly improved.

From conversation and correspondence with Public School Inspectors and others, there are, I find, districts and ridings of counties for which the proposed standard would be too high and would produce what is said to be showing itself already, a dearth of teachers, owing to the low salaries these localities can offer. It will not do to keep the general standard low to suit the capabilities of the lowest. Our present system of district certificates should be continued. The examination therefor, might be held on the Public School Leaving papers with, if necessary, a higher pass percentage than that for the ordinary candidate; the answer papers being examined at Toronto, and the preparation of the candidates being confined to the High and Public Schools of these districts and counties. The last provision is an imperative necessity; otherwise we should have this work done in many of our High Schools, with all the evils of an additional examination. As is the case at present with the Art School examinations in some localities, these examinations would be taken, and the results would be paraded as so many counts in the record of the High School.

(5) The present examination scheme should be remodelled. One of the commonest objections to our examinations is their unreliability. It is often said, with good grounds, I believe, that, within certain limits, the poorly prepared candidate has just as good a chance of passing as the well prepared one; and one of the commonest complaints I hear in the schools is that the good candidate has failed while the poor one has passed. The proper recognition of the teacher's estimate will do much to remedy this evil. But cannot more be done? Each paper at the Teacher's examination, in particular, should contain more questions than the candidate is required to answer. The examiner can ask only a small number, which at best touch comparatively few points of his subject. We do not expect the average candidate to have mastered it completely; few would pass if we did; and the smaller the number of questions set, the less reliable the result in the case of a qualifying examination. Under this provision, too, the examiner would have a greater freedom in setting his questions, and an occasional oversight might not prove so disastrous or so embarrassing as it now does.

It was once the custom to value each paper at over 100 per cent, but the unification of the examinations led to its abolition; for the choice of questions allowed the teacher was often represented to be a source of embarrassment to the young candidate and the cause of his failure. It is, however, reasonable to conclude that the principle might be

made general, if the teacher's estimate were given due weight; for it would remedy an occasional error of judgment on the part of the candidate.

The feature of our system that most surprised the educationalists I met in the United States was the difficulty of our examination papers. We could, I believe, secure the desirable thoroughness if our questions in some departments were less exacting, and our pass standard and our standard in valuing the answers were more so. No system of examination is in practice exactly what it seems to be on paper; but the discrepancy in our case is too great. After many years' experience in connection with all phases of this kind of work, my conviction is that if the reality corresponded to the appearance, a very large number of those now reported as passing would not survive. The departmental examinations are merely qualifying; they are not competitive. All the questions should suit the average candidate, and the standard for valuing the answers should be an accurate one. Otherwise, wrong ideals of scholarship are set up; and the successful candidate is tempted to a self-reliance and a self-sufficiency unwarranted by the facts. There are, I need not say, other moral considerations connected with this question; but on these I need not enlarge.

It goes without saying that none but the most experienced teachers should act as examiners and associate examiners—teachers who are also conversant with the requirements and capabilities of our system. The Board of Examiners of the University of the State of New York is a permanent one, and in England, I believe, men make examining a profession. We cannot yet have such permanency, but a reduction in the number of examinations held by the Department would enable it to secure and retain the services of thoroughly competent teachers. More than legal qualification is necessary to make a good examiner; and, when the examiner is found to be a good one, he should hold office until an equally good one is found to replace him. Perfection in anything is impossible in this world, but this world will be better if we strive to attain it.

(6) Lastly, I recommend most strongly that the results of the departmental examinations be not published in the Toronto dailies. They should be sent for communication to the candidate, to the Principal of the school, or, in his absence, to the secretary of the School Board, and, in certain cases, to the Public School Inspector—anything rather than the plan we now follow. That the plan does not meet with the approval of the teachers themselves is shown by a condemnatory resolution passed at a late meeting of the Ontario Educational Association. The change would not, it is true, prevent the too frequent local jubilation over the results, with its invidious and often unjust comparisons; but, in time, a better spirit would prevail and the examination would take its proper place. Nothing has done more harm to secondary education in this Province than the annual exploitation of the departmental examinations. The adoption of the foregoing proposal would, I feel certain, do more to produce a healthy tone in our schools and set up a proper ideal of education in Ontario than any other change that could be made.

COURSES OF STUDY: GENERAL PRINCIPLES.

A few general principles need to be stated:

(1) The forms and the courses for a general scheme should be arranged to meet the capabilities of the average school. Progress should not be impeded by making a prime consideration of the shortcomings of schools that are insufficiently manned or insufficiently equipped. Modifications should be allowed, but no encouragement should be offered to two or three masters' schools to attempt work for which they are incompetent. As a matter of fact, the Continuation Classes are producing a new grade of schools, and the time is not far distant when the relation of such classes to the two-masters' High Schools will force itself upon the attention of the Education Department. In the matter of the Legislative grants the present scheme is an anomalous one.

(2) All the courses should be constructed solely on educational principles and in accordance with the actual necessities of the Province. Where not inconsistent with what is most important—proper culture and discipline—the courses controlled by the Education Department should be given a practical turn; so that, while being trained morally, mentally, and physically, the pupil may also acquire a knowledge of what is useful for general as well as for special purposes. But culture must be the main goal of our educational system.

(3) The number of courses and the number of subjects therein and for each form should be reduced as much as is consistent with the objects of the courses and the requirements of the different localities. Pupils should have study periods especially in the lower forms; and I hope the time is at hand when each teacher also will have a period a day in which to help the backward pupil and attend to some other duties which he now takes out of school. Such periods are a usual provision of the American schools. The intensive study of a comparatively limited range is the most desirable characteristic of any curriculum; and, what is exceedingly important, as many of the subjects as possible should be relieved from the pressure of the examination. No artificial stimulus can wholly take the place of the teacher's sense of duty and his professional judgment.

Here again all necessary modifications should be at the option of the Board and the Principal. In other words, to meet the conditions of the different localities—conditions which will, in some respects, vary more and more as the years go by—we should have, within reasonable limits, greater flexibility and more local control of our courses of study. This is no new principle. A regulation now recognizes it in part: "In the case of pupils preparing for University Matriculation or taking the course for a Commercial Diploma, or where the Board introduces Manual Training or any other branch of technical education, on the recommendation of the Principal, less time may be given by the pupils concerned to one or more of the obligatory subjects of the High School course so as to meet as far as practicable the aims of the pupils."

Clause 9 of the present High Schools Act also gives the trustees of a school the power to prescribe the option to be taken at matriculation. All that is needed is a fuller recognition of the principle—a recognition, I may say, which would render unnecessary frequent and embarrassing changes in the Departmental Regulations. I should note here that, in a good many localities, particularly in the High Schools, Boards of Trustees take too little interest in the organization of their schools and throw too much responsibility upon the Principal. It is important that the latter should control the details of the organization and, within limits, the prescription of the duties of his assistants; but it would, I think, be well for our system if School Boards made themselves familiar with the requirements of their localities and decided which courses were to be taken up. A Bill introduced into the Legislature a year or so ago (but subsequently withdrawn) by the late Minister of Education, contained a provision which, in my judgment, is a most desirable one. It threw upon the High School Boards the responsibility of the selection of the courses, a selection to be made at a special meeting to be held in the last quarter of the academic year. Some High School Boards are too ready, I find, to throw upon the Principal the responsibility of refusing to take up subjects, and I have known cases where the latter has been greatly embarrassed. The Principal, of course, being the expert in the subject, would be the main adviser, but Boards should not shirk their responsibility.

COURSES OF STUDY.

The following courses, in my judgment, conform to the general principles laid down above as far as it is possible to do so with due regard for all the interests involved. I deal here with the outlines: the details I will discuss further on.

PUBLIC SCHOOL COURSES.

My report is concerned chiefly with the High Schools; but some of the Public School courses are closely related to those of the High Schools through the Entrance and the Public School Leaving examinations, at which points pupils enter the High Schools. The interests of both classes of schools would, I believe, be served by the adoption of the following courses and examinations:

Fourth Form Subjects.

Reading, Writing, Spelling, Geography, Grammar, Composition, History, Arithmetic, Drawing, Hygiene, and Nature Study.

Subjects of High School Entrance Examination.

Group 1. Reading, Writing, Spelling, Geography, Grammar, Composition, Arithmetic.

Group II. Literature, History, Drawing, Hygiene, and Nature Study.

The papers for Group I. to be set as now by the Education Department; the answers to be valued and adjudicated upon finally as at present; and the teachers' formal confidential report to be given due consideration.

The examinations in the subjects of Group II. to be held by the Principal; and his report thereof, endorsed by the Public School Inspector, to be accepted by the High School Entrance Board.

Fifth Form Subjects.

Reading, Geography, Grammar, Composition, Arithmetic, Literature, History, Algebra, Euclid, Drawing, Book-keeping, Elementary Science (including Agriculture), and the languages (Latin, Greek, French, German) when a competent teacher is available and the organization will permit.

Subjects of Public School Leaving Examination.

From all I can learn, the abolition of the Public School Leaving as an examination party, controlled by the Education Department would be contrary to the wishes of most of those connected with the Public Schools. It is probable, too, that, in the present temper of the people, its abolition would be followed by a partial collapse of educational effort. We may, however, adopt a scheme on the same lines as are the other proposed examinations. But it would, I hold, be unjustifiable to continue to dislocate the High School system in order to give the Public School Leaving a value for a teacher's certificate. The attendance at the Continuation Classes is on the same financial basis as is the attendance at the High Schools. If there is not enough zeal on the part of all concerned to induce the pupil to attend the Fifth form of the Public Schools, we should wait until there is. The sooner we give up attempting to induce pupils to take an education because it has a denominated value in dollars and cents, the better will it be for Ontario.

The following is the scheme I suggest for this examination:

Group I. Reading, Geography, Grammar, Composition, History, Arithmetic, Algebra, Euclid.

Group II. Literature, Drawing, Book-keeping, Elementary Science.

As in the case of the Entrance, the papers to be set by the Education Department on the subjects of Group I. and the examinations to be conducted by the same Board and in the same way, except as already noted, where the papers are to be used to test the qualifications of teachers in the districts and the less advanced counties. In this case, the papers must of necessity be examined and adjudicated upon by a central Board of Examiners; but the teacher's examinations and his general estimate of the candidate's fitness should be accepted as proposed below in the case of Teachers' Non-professional examinations.

HIGH SCHOOL COURSES.

At present our programme recognizes only four forms. Practically, except in the smaller schools, there are at least five, where the work of Form IV. is taken up. In schools with four masters—the smallest number capable of doing effectively all the work of all the forms—Form II. has usually been divided. Now, however, owing to the abolition of the Primary and to the examination pressure on promotion, what is really the upper division of Form II. is frequently counted a division of Form III. To do the work of our programme with proper regard for both the pupil and the teacher, there should be five forms to correspond to the five years it actually takes the average entrant to complete the work. The necessary modifications of this division of forms would, of course, be made by the smaller as well as by the larger schools.

I submit, accordingly, the following scheme of subjects which may be taken up in each Form. It is made out on the basis of eight periods a day, and the number in brackets after each period shows the amount of time that should be devoted to each subject under normal conditions; in Form I., few, if any, new text-books will be needed:

CURRICULUM OF SUBJECTS.

FORM I. Reading (3), English Composition (4), English Literature (3), English Grammar (3), Arithmetic and Mensuration (4), Canadian History, with elements of Civil Government and duties of citizenship (3), Geography—Political [first term] and Physical

[second term] (3), Elementary Science (3), Drawing and Writing (4), Physical Culture (3), Latin (5), Commercial course [special] (3), Manual Training, with special Drawing (7), Domestic Art (3).

FORM II. Reading (2), English Composition (4), English Literature (3), English Grammar (3), Arithmetic and Mensuration (3), Algebra (4), Euclid [Second term] (3), Outlines of English History with Civil Government (3), Physical Geography [First term] (3), Elementary Science (3), Drawing (4), Commercial course (5), Latin (5), Greek (4), French (4), German (4), Manual Training, with special drawing (10), Domestic Science (3).

FORM III. English Composition (3), English Literature, including Reading (3), English Grammar (3), Arithmetic and Mensuration (3), Algebra (4), Euclid (3), Outlines of English History (3), Elementary Science (3), Physical Culture (3), Latin (5), Greek (4), French (4), German (4), Commercial course (10), Drawing [Special Art Course] (5), Special technical work (10).

FORM IV (now Form III). English Composition (3), English Literature, including Reading (3), Ancient History, with review of English History (4), Algebra (4), Euclid (3), Physics (5), Chemistry (5), Latin (7), Greek (4), French (5), German (4), Physical Culture (3), Special technical work (15), Drawing [Special Art Course] (5), Arithmetic and Mensuration, and English Grammar [special for teachers] (each 2).

FORM V (now Form IV). English Composition and Rhetoric (2), English Literature, including Reading (4), English History [1492-1885] (3), Algebra (4), Euclid (3), Trigonometry (3), Chemistry (4), Physics (4), Biology, or Mineralogy and Geology (4), Latin (7), Greek (5), French (5), German (5).

COURSES OF STUDY.

The subjects for matriculation and the preliminary professional examinations are prescribed by outside authority. Only these subjects, with Reading, Drawing and Writing, and Physical Culture, should be obligatory on candidates therefor.

The following is the general scheme of courses to be controlled by the Education Department:

Group I. Obligatory Subjects of Forms I—IV.

Reading, English Composition, English Literature, English Grammar (of Forms I.—III.), History, Geography, Arithmetic and Mensuration (of Forms I.—III.), Algebra, Euclid, Drawing and Writing (of Forms I. and II.) Elementary Science (of Forms I.—III.), Physical Culture.

Group II. Elective Courses.

One to be taken, not more, without the consent of the Principal.

(1) General Culture; (2) Domestic Science and Art; (3) Commercial; (4) Agricultural; (5) Technical; (6) Art Course; (7) Teachers' non-professional.

As to group I.: The subjects are those which should be taken by the average pupil who is to remain at school for about four years after having passed the Entrance examination. The High School Principal should have the power to omit or modify any of them in the case of pupils for whose physical or mental capacities they are unsuitable, to whose future calling they are not adapted, or whose attendance is likely to be too short for them to derive proper benefit from a partial course. Under this scheme all the necessary flexibility is secured. In the last case, too, the pupil should be permitted to take the commercial course with Form II. or, if necessary, a special class in Form I.

As to group II.: The subjects for the teachers' non-professional examinations are fixed by the Education Department. Those for the other elective courses, as regards both their number and their details, should be at the discretion of the High School Board, within such necessary limitations as may be set by the Regulations.

Of the subjects of Form V. English Composition, English Literature, and History should be obligatory: the others, elective, any four being regarded as a full course, subject to the same conditions as are the subjects for forms I.—IV.

Teachers' Non-Professional Examinations.

The only High School examinations controlled by the Education Department would be the two teachers' non-professional examinations. The following schemes are in line with those I have proposed for the other examinations:

FIRST EXAMINATION.

Group I. Subjects of Form IV : English Composition, English Literature, English Grammar, English and Ancient History, Arithmetic, Algebra, Euclid, Physics, Chemistry.

Group II. English Literature, Reading (of Forms I.—IV. inclusive), Book-keeping (of Form II.), Drawing (of Forms I. and II.), Geography (of Forms I. and II.), Elementary Science (of Forms I.—III. inclusive).

In the subjects of group I. the Education Department would examine as at present, the teachers' estimate being given due weight. In those of group II. the Principal and his staff would examine, and their report would be accepted by the Educational Council, when endorsed by the High School Inspector or other authorized Departmental officers. Under this scheme no certificate should be valid except that of a High School or Collegiate Institute Principal or of the Principal of a Continuation Class in a Public School (or in a Private School of a similar character) equipped and organized satisfactorily, as reported by an officer of the Education Department. Practically such Public or Private Schools would be High Schools with a more limited programme. In the case of pupils coming from other schools where they have done some of the work, the Principal of the School would not grant the certificate until he is satisfied as to the competency of the candidate. It is a necessity of the educational situation in the Province that the work of preparing teachers should be done in the High Schools, and it is desirable to recognize local interests. But it would be a grievous calamity to education if the interests of the large majority of the pupils were sacrificed as is now too often the case, to enable ambitious Boards and School officers to attempt work beyond the capabilities and necessities of the Public Schools.

SECOND EXAMINATION.

Subjects of Form V. English Composition and Rhetoric, English Literature (including texts of Form IV.), English History, Algebra, Euclid, Trigonometry, Physics, Chemistry, Biology (or Mineralogy and Geology), and Latin (including texts of Form IV.).

On these subjects, as now, the Education Department would hold the examination; but the Principal and teacher's certificate that the work in Science had been taken up practically (endorsed by the High School Inspector) would be accepted in lieu of the present practical examination in the department.

The examination to be * one time, or to be divided into two parts and taken at different times as follows :

Part I. (to be taken first) : English Composition and Rhetoric, English Literature, English History, Algebra, Euclid, Trigonometry.

Part II. English Composition and Rhetoric, Algebra, Chemistry, Physics, Biology, (or Mineralogy and Geology), Latin.

The examinations in the two most important English and Mathematical subjects are repeated in Part II; so that, when the candidate passes, he will have them fresh in his mind.

Candidates who, in addition to the certificate of competency in certain subjects required for the first examination, present also a certificate from the High School Principal that they have passed a satisfactory examination in Arithmetic and Mensuration and English Grammar, to be allowed to take the second examination without passing the first.

It is proposed to divide the examination, as now, for the following reasons :

(1) Such division will lessen the examination pressure. Few candidates but those of good ability who have taken the regular course in the Forms, could pass in all the subjects at one time; and yet all are necessary parts of the teachers' preparation or are needed for culture.

(2) Teachers could prepare at home wholly or partly for Part I.

(3) Teachers who wished to matriculate from this Form could do so without any great effort by adding to the subjects of Part II. the other language prescribed by the universities.

(4) Some of the smaller schools would thus be able to take up Form V. work.

REMARKS ON THE COURSES.

It is unnecessary in a report like this to attempt to give the details of the different courses. If the principles of construction are accepted, the details can be readily supplied. I must, however, add some remarks in explanation of the proposed curriculum.

High School Entrance Standard.

The average age last year of the entrance class of the Hamilton Collegiate Institute was 14 years and 3 months; and, as Principal Thompson tells me, it seems to be impossible to have pupils ready any earlier. The Hamilton Public Schools are of the highest type we have, and this may be taken as the best that can be done properly under our system. I have no sympathy with those who advocate the admission of pupils when they are 9 or 10 years old. But they should enter earlier than now. Probably the least defensible proposal ever submitted to the Education Department was one to begin the High School course after the subjects of the Public School course have been completed. True, this is the general rule in many parts of the United States. No one, however, who knows the situation can maintain that, in the subjects that are the mainstay of liberal culture, the product of the American High School is to be compared with the product of the secondary schools of Great Britain or Germany. But this is not the rule in the most advanced cities. In Boston, with its nine grammar grades, besides coming from the highest, pupils enter from the sixth (over eleven years of age); and in other cities, as in Brookline, provision has to be made for the languages in the two highest grammar grades. So far as our entrance classes are concerned, the opinion of many educationalists of this Province—in which I heartily concur—is that enough energy is now expended by both pupil and teacher to reach a proper standard at 13, or thereabouts. What is chiefly needed, is the rationalization of our methods of teaching and examining.

English.

The general aim of a course in English should be to impart a knowledge of the structure of the language, to develop ease, fluency, and correctness in both oral and written speech, and to give an acquaintance with and a taste for our finest literature. Systematic composition and wide and well chosen courses of reading are the main objective points. In our Public Schools, grammar is, I believe, begun too soon. Form IV. is early enough, and the scope of the subject for a boy of 11 or 12 is narrow, indeed. The attempt, too, to train him to give reasons for the correction of "false syntax," except in the simplest cases, is a useless one. He has neither the logical power nor the necessary knowledge. The same remark applies in a degree to the first year in the High School. For the ordinary pupil, the subject should not be made an important one until the second and third years of the High School course, and then less of the analysis and parsing that sometimes form the staple of the teaching is much to be desired. Special arrangements for teachers must be made, but these need not interfere with the general interests. As to English composition: this subject should be emphasized throughout the whole school course: to be able to marshal our thoughts in suitable language is the highest product of culture. Owing to the pressure of the plucking subjects, English composition now suffers from comparative neglect in both the High and the Public Schools. Oral reading, also, as I have shown, should have more attention. Besides being a most admirable culture subject, it is the best means of systematically removing the defects of enunciation and expression, to which the young Canadian is especially prone. It is an unfortunate necessity of the situation that so much time has to be spent in formal reading in the High Schools; they have now to make up for the defects of the Public Schools. In literature, our courses are also in need of amendment. Reading must be both intelligible and intelligent. The examination in oral reading will test the intelligibility, and, under proper training, the intelligence: I propose to test the latter more fully at the Entrance and Public School Leaving by a paper similar to the present "literature" one, but constructed with this object solely in view. Until most pupils are at least 16 or 17 years of age, the sense of literary beauty is very small;

but we may cultivate the taste for good literature by directing the reading from the first. No one supposes, I am sure, that our present grind over the prescribed selections in the Public School Reader can do this. Supplementary reading and the present freedom in the lower forms of the High Schools (whence the High School Reader should be banished), conjoined with the greater maturity of the pupil and the vivifying influence of a cultured teacher produce more satisfactory results. Even here, however, there is much room for improvement. The American scheme is, in many respects, a better one than ours. In it, generally, a course of reading, consisting of a dozen or more suitable books, is laid out for each school grade, beginning usually with the second in the Grammar School. The books are provided either by the Boards or, as I will show later, by the Public Libraries, and the subject is made an important feature of the course.

The following extract from the report of the Superintendent of the Utica Schools shows what is being done there in the Grammar Schools; a similar scheme is followed in all the High Schools I visited:

In our curriculum, three courses in reading are provided: one for the regular exercises during school hours, one for teachers to read to the pupils, and one for the pupils to read out of school. Each of these has its special purpose and province. The first is the ordinary reading work of schools, and is designed to furnish the main opportunities for teaching the pupils to read. The second should be used to impart information, to set good models of reading, to interest the children in good reading and noble themes, and to inspire them with high ideals and lofty purposes. In the third course, teachers may do very much to direct the reading of the pupils into right channels, and to cultivate the habit of reading only good literature. One plan for getting the pupils to read the desired books and for deriving the most good from such reading, would be for each teacher to have charge of a certain part of the pupils with reference to this outside reading—to advise as to books to be read, to discuss books when they have been read, and to keep account of the reading done. In order to get credit for reading any book the pupil must report it to his teacher and give such an account of the book as may be required by the teacher. Teachers will keep a record of books thus reported and discussed.

This is what I mean by "Literature" in the scheme for our Public School Entrance and Leaving. The examination there spoken of is one that could be conducted by the teacher in any way and at as many times as he pleased.

The course should be introduced by each local board, as circumstances might permit. The progress of the rest of the Province need not be kept back because of the financial weakness or the indifference of some localities. Besides the usual literature examinations of Forms IV. and V. of the High schools, a similar certificate should be expected from the Principal of the High school. Here there would be less difficulty; for most of our High schools have fair libraries, and it will be easy to utilize the public one. I should add to this statement in regard to English, that, in many parts of the Province, the prescription of a spelling book out of which the dictation is to be taken, is felt to be another wrench of the examination screw. The propriety of the prescription is also more than doubtful from the educational point of view.

History and Geography.

Probably no subjects press more heavily on Form IV. of the Public schools than history and geography. The former has always been a grievance, and the necessary memorization of details connected with both has been proved to be excessive. In the proposed scheme for the Entrance examination, the course and the examination in history are to be left to the staff, and it should be understood that the course and the paper in geography will be less exacting. The amount of geographical knowledge that serves the ordinary citizen is by no means great. When he needs a fact that he does not know, he simply hunts it up. It is worth more to know where to find and how to use details of current value than it is to have burdened the mind with a load that soon becomes obsolete. In the High school, a few months' special study is ample. No new text book is needed; the Public school geography contains enough, and the subject in its political and commercial aspects should be taken up in connection with history. Physical geography, "the study of the physical environment of man," is the side of the subject that connects it with science. It is a High school subject and should be made an important one. As we count time, its facts are permanent, and it lends itself readily to the best kind of training. In the American schools it is made as practical as possible; trips being taken, especially in the large cities, to observe and discuss the character and phenomena

of the surrounding country. Most of our pupils need only to have their eyes opened to their surroundings. The following course is from the report of the Committee on College Entrance requirements for 1899, and shows what some aim at in teaching physical geography; books of reference, no text books, are used:

Figures in parentheses indicate the number of hours for each exercise.

Cause of day and night, and extent of sunlight over surface, (1). Determination of latitude, north and south line, and high noon, (1). Determination of difference of longitude by sending watch, (1). Finding variation of local and standard time, (1). Making maps on different projections, (4). Study of ocean-current maps, (1). Study of tide charts, (1). Study of map of the world, showing heights of land and depth of sea, (2). Difference in temperature between the top and bottom of a hill, (1). Finding height of hill or building by barometer, (1). Determination of dew-point, (1). Making isotherm and isobar maps from furnished data, (4). Study and reproduction of weather map, (1). Predictions from weather maps (written with reasons), (2). Observations of rain-fall, temperature, velocity of the winds, etc. Determination of the amount of snow-fall and the amount of water produced by an inch of snow, (1). Observations of ground temperatures, depth of frost, etc. Making contour and hachure maps from small models, (2). Drawing cross-sections from contour maps, (4). Written descriptions of models, (4). Picture-reading (written description), (4). Map-reading (written description), (4). Reproduction of contour map in country to be seen, (4). Making map of small area in neighbourhood, (1). Planning of journey, with study of rocks and minerals, (10). Determination of the amount of sediment carried by a stream, (1). Study of Four excursions in spring, (8). In fall, four excursions, one a week, (8).

As to history; until a pupil's logical powers are fairly developed, the study of history is usually little better than the memorization and connection of useful facts. This and the practical aspects of the subject have been kept in view in the construction of the High School course in the subject. The ancient history for Form IV. (now Form III.) is not simply the limited period for University matriculation, but such a course in Greek and Roman History as is contained in *Myers' Ancient History* (Ginn & Co., New York). Such an outline would give the ordinary student a fair idea of the whole subject. The University student has advantages not enjoyed by the large majority of those who take the High School course. It is unfortunate that our Form V. pupils cannot be given an outline of European history; but, with our methods and ideas, the course proposed is probably all that can be safely attempted at present.

Mathematics.

Around this department have been fought some of the fiercest fights of the educational arena. Of late years it "has fallen on evil days and evil tongues." Some sorrowful spirits still sigh for the golden days of its supremacy; but the large majority of the mathematical men are now at least as reasonable in their pretensions as are the members of the other departments. They complain, and I think justly, that the unification of the teachers' with the matriculation pass examination has lowered unnecessarily the standard of scholarship in mathematics, and they see, in this lowering of the standard a reason for the separation of the examinations. The same objection holds with English masters in the case of English grammar. It is to be hoped that any new course of study will provide suitable training in the two subjects which are of special importance for the Public School teacher. Ten year or so ago arithmetic and English grammar were banished from the U. S. High Schools. The Boston programme, given further on, shows that they are being reinstated. In some schools I found them "reviewed" in the last year of the course.

So far as my knowledge of the situation goes, not much fault can be found with the details of the courses in mathematics. Some complain that there is too great a gap between the algebra of Form IV. and that of Form V., and some would like to see modern geometry substituted for euclid. But the gap is due chiefly to the examination standards; and, until the University of Toronto sees fit to banish euclid, the latter subject need not be discussed. The faults of our mathematical courses are rather faults of method. As to the entrant from the Public School, the facts warrant the statement that he is too often inaccurate in mechanical work and ignorant of some important parts of elementary arithmetic. To quote the words of one of our most experienced mathematical principals in a district where the public schools are of good standing: "Not one student in ten who come to our High School can perform operations involving the four simple rules rapidly and accurately. This is due, I think, to the immense amount of time spent in the higher

forms in solving problems, and in hair splitting analysis of the logic of the solutions; the latter being, with junior students, a sheer waste of time. In some schools in this district one hour and a-half a day is spent by the senior classes in arithmetic alone, and yet they come to us unable to do the work expected of a clerk in a store or in a bank."

The principal of one of our leading collegiate institutes expresses himself thus:

"My experience with pupils coming from the public schools is that they are sadly deficient in the elementary rules. They are exceedingly inaccurate in all mechanical work and seem to know next to nothing of fractions, vulgar or decimal. I think that, in the public schools, some attention should be given to mechanical work and mental arithmetic. Whatever course is laid down, the teaching will be largely governed by the character of the papers set. The examiner should be carefully instructed regarding the class of questions to be asked."

I may add to this that similar complaints are by no means unfrequent as to the character of the work done in many of the High Schools. The fact is our examination ones have had too much control, too little has been left to the good sense of the different localities, and in our zeal for logical training we have ignored too much the claims of practical life.

The Languages.

I have already pointed out what is probably the chief defect of our language teaching—the neglect of pronunciation. So far as my judgment goes, our courses of study are good; what we need is a better standard of scholarship; pupils pass the examinations far too easily. I have known of some who have passed the Junior Leaving in Latin, for example, after three months' preparation. Six months is not an unusual limit, and a year is common. Indeed, in many cases, the second language for the Senior Leaving (in the honor course, be it remembered) has been got up from Sept. to July: I have found pupils reading Plato after a three months' preliminary course in Greek. Under these circumstances the complaint from the Universities that our schools do not (it is held, I believe, that they cannot) prepare students for matriculation by the time they are 17 is unreasonable. Our language departments are manned with honor university graduates; all that is needed is for the universities to set a proper standard, and the schools will adapt themselves to it. Subjects that are now emphasized too much as the result of other examinations will receive less attention, and the matriculant will be properly prepared in a reasonable time. Everything in the schools follows the flag of the examination.

It is held, I believe, in some quarters, not only that language study should be begun earlier, but that we should aim at a conversational knowledge in the case of French and German. I have already pointed out that there is ground for holding that the pupil now enters the High School too late; but there is no good ground for the second complaint. The ability to converse in French or German is for us of secondary importance. In our High Schools, practice of this kind is valuable only as a means of securing the higher objects of scholarship and literary culture. The amount of time necessary to obtain a conversational command of a language cannot possibly be given in our schools; and, as a matter of fact, it is not given in any University in Ontario. Even if it could, our geographical position and our trade relations are such that it would not now be of practical value to one in five hundred. The situation is of course, different in Germany and in other countries in Europe where a colloquial acquaintance with modern languages has a commercial value and where the teachers can themselves speak the foreign language. How many of our honor university graduates can do this? No system can be copied for Ontario: we have our own peculiar needs.

Obligatory Latin and optional French for teachers' certificates have created very large classes in these languages in our High Schools, classes too often, necessarily, very badly organized. The abolition of this provision would reduce the number, and would give the teacher the opportunity he has not now, to do individual teaching. Latin is too highly esteemed as an element of culture even by the *vulgus profanum*, and French and German are of too much practical value, ever to be relegated to a subordinate place in our Schools. Neither the modern languages nor the classical master need fear that he will be reduced to the straits of Othello; his occupation will not be gone.

Science.

The course in science proposed begins with Nature Study in the lowest grades of the Public Schools, to be continued throughout into the Elementary Science of Forms I., II. and III. of the High Schools, and is to be completed by a systematic course in Physics, Chemistry, and Biology (or Mineralogy and Geology) in Forms IV. and V.

Nature Study or, as it is called in the British schools, "Object lessons in Science," and in the German schools, "Naturbeschreibung," is a term of wide and varying significance. Its content is not definitely settled, nor should it be; but teachers have come to include within its meaning the study of plants, animals, and simple natural phenomena. I quote from the report of one of the American School superintendents:

Nature study furnishes a most valuable means of training the child to observe carefully and describe exactly; of developing the power to see, to think about what is seen, and to draw correct conclusions.

In all the work in nature study, the aim should be to foster the child's love for out of door life, to lead him to see the wonders and beauties in nature, and to rouse an abiding interest in and reverence for all God's creations. It may thus be made a means also of cultivating the child's higher nature and of awakening and training the feelings which constitute the basis of moral character. Facts will be collected, names will be learned incidentally, as a convenience in expressing the phenomena observed, but the mind will be occupied with the life and purpose of the plant or animal observed and the adaptation of the parts to the work to be performed.

The material to be used in the study of plants and animals should vary with the season rather than with the grade of the class, the same material being adapted to the different ideas to be impressed from year to year. It should be used also as the material for drawing lessons; that the result may show whether the pupils have really seen what it was desired they should see, and that opportunity may be afforded for applying principles learned in other drawing lessons.

Literary gems, simple ones to be read or learned by the pupils, more difficult ones to be read to the class by the teacher, can be associated with the nature work at every step.

No definite programme can be made on this subject; and none should be attempted. But, in order to give some definiteness to the proposal, I insert the suggestive scheme now in use in the first six grades of the Utica Grammar School; it is found in a work for teachers prepared by Prof. Scott of the Oswego State Normal School:

Grade I. PLANTS.—One or two plants as wholes, formation and dissemination of seeds, fruits, evergreens, buds, life history of bean or pea, one tree observed throughout year.

ANIMALS.—Caterpillars and butterflies, snails, birds, shelter and protection of animals and men.

Grade II. PLANTS.—Two whole plants, (one a composite), dissemination of seeds, falling and color of leaves, fruits, grains, development of buds, life history of bean and pea, two trees observed throughout year.

ANIMALS.—Caterpillars and butterflies, crickets or grasshoppers, spiders, snails, snail and clam shells, domestic mammals, flight and return of the birds, habits of two or three birds.

PHYSICS.—Water, its forms and work. Air, its presence and uses.

Grade III. PLANTS.—Flowers, grains, vegetables, preparation of plants for winter, evergreens, buds, germination, forms and structure of leaves, tree flowers, life history of two unlike plants, two unlike trees, compared throughout year.

ANIMALS.—Spiders, ants, bees, beetles, or flies and their larvae, crayfish, fish, turtle or frog, corals, birds.

MINERALS.—Fossils and limestone, quartz, soil-making, and formation of valleys.

PHYSICS.—Heat, its sources and effects upon solids, liquids and gases.

Grade IV. PLANTS.—Roots and stems, their forms and structure; leaves, their function, form and structure; careful observation of one or two trees for entire year; one or two whole plants.

ANIMALS.—Insects not studied before; some classification of insects; earthworm, habits and structure; mammals and other vertebrates; starfish and corals.

MINERALS.—Sandstone and stratified rock; granite rocks, formation, properties, transportation (by glaciers), and uses; soil-making and formation of valleys reviewed.

PHYSICS.—Heat; production, absorption, radiation, conduction and effects.

Grade V. PLANTS.—Ferns, two or three additional trees studied.

ANIMALS.—Articulates, including jointed limbed animals and worms, their life history, (development from egg), habits, relation to man, structure and classification.

PHYSICS.—Gravitation, pressure of liquids, and pressure of air.

Grade VI. PLANTS.—Flowers and fertilization, dissemination of seeds, preparation of plants for winter.

ANIMALS.—Insects and birds; life history, relation to environment and man, structure and classification.

PHYSICS.—Capillarity and osmosis, lever, pulley, wheel and axle, and inclined plane.

Nor should we attempt to make out a rigid programme for the Elementary Science of Forms I-III of the High Schools. In it also, no text books should be used by the pupils. A suggestive outline might be given, but the details and the order of the subjects should be worked out by the teacher to suit his environment and the necessities of his pupils. As far as possible the pupil's eyes should be opened to the processes of nature around him, and he should be trained to understand them as far as it is possible

to do so. The course should consist of the elementary conceptions of physics, chemistry, and mineralogy and geology, with studies of plants and animals. As with nature study, the course should be given, when desired, an agricultural turn. The details in biology will present more difficulty than those in the other subjects. The following schemes will give an idea of what is proposed:

Studies of Plants.—Early fall and spring. The study of a typical plant, to become acquainted with the chief plant structures—root, stem, leaf, flower; functions of each structure; requirements for the existence and perpetuation of plants; variations in form and position of the various parts to meet the necessary conditions of living; the struggle for existence. Some plant diseases—black knot, rust, leaf curl, smut (corn).

Studies of Animals.—Collection during fall months of the cocoons of various insects, especially those injurious to vegetation, and their preservation in suitable boxes through the winter; the practical study of these in the spring as they emerge from their cocoons, the imago, egg, larva, and pupa and so far as possible, the life history of each; the study of the external features, habits and life history of the army worm, the tent caterpillar, the pea-weevil, bark lice, the codling moth, the cabbage butterfly. Full observations of the migrations of birds, records kept, similar observations in the spring of the returning birds and records of the order of arrival; their spring habits and fall habits; their plumage, song; resident winter birds and other animals, their adaptations for this climate; birds and animals beneficial and injurious to the agriculturalist and horticulturalist; general observations on animals, to become acquainted with various adaptations for securing food, for self-defence, rivalry, defence of young, meeting the conditions of their surroundings; community life as seen in bees and ants; some animal parasites and the resulting degeneration.

What should be aimed at in the teaching may be gathered from *Studies of Plants and Animals* (D. C. Heath & Co., Boston), which I saw in use in the Englewood and Hyde Park High Schools, Chicago. The method is admirable.

In Forms IV and V, where the work should be taken up systematically, physics and chemistry should be made as practical as possible, and the agricultural applications of biology should be continued. To the present course in Form IV (now III) chemistry, for example, the following might be added:

Certain elements whose compounds are used in many industrial occupations; calcium and its compounds used in constructive work; sodium and its compounds used in the arts and manufacturers; aluminum, the uses of the metal and its compounds in the arts, &c. Silicon and iron.

A study of the compounds (their nature and action) used in the household for cooking and for cleansing; common adulterations and how to detect them; common poisons and their antidotes; germicides; the elements of sanitation.

In many parts of the province I have found a desire for a course in mineralogy and geology instead of the present one in Biology. In view of our vast mineral resources, the desire is a natural one and might be gratified without embarrassing the schools if it were allowed in Form V, where the biology of that Form will not be taken up. The elements of the latter subject would be provided for in the Elementary Science of Forms I-III. The following is to be credited to Prof. Miller, of the Kingston School of Mines:

PROPOSED COURSE IN GEOLOGY AND MINERALOGY.

1. Brief outline of the theory of the origin of the earth and other members of the solar system.
2. Planetary relations of the earth.
3. The Atmosphere } Treated in a general way as the envelopes of the solid
Water } earth.
4. Solid crust and probable nature of the earth's interior.
5. General chemical composition of the crust.
6. Meaning of term Mineral; crystalline state of matter.
7. Meaning of terms Hardness, Streak, Lustre, and Specific Gravity, as applied to Minerals.
8. General chemical composition and physical characters (Hardness, etc.) of Graphite, Magnetite, Hematite, Pyrite, Galena, Gypsum, Halite.

9. The rock forming minerals Calcite, Quartz, Orthoclase, Plagioclase, Muscovite, Riotite, Hornblende, Pyroxene and Olivine.
10. The use of a simple table for the determination of common minerals.
11. The terms mineral, rock, ore compared.
12. Classification of rocks:—A. Igneous, B. Aqueous, C. Metamorphic. Examination of hand specimens of the following members of each class:—
 - A. Igneous Rocks.
 1. Plutonic—Granite, Syenite, Diorite, Gabbro.
 2. Volcanic—Rhyolite, with pitchstone and pumice, Trachyte, Andesite, Basalt, Diabase.
 - B. Aqueous Rocks.
 - Conglomerate, Sandstone, Shale, and Limestone.
 - C. Metamorphic Rocks.
 - Quartzite, Slate, Marble, Mica Schist, Gneiss.
13. Volcanic Action:—
 - Causes of volcanic action and description of the products of the action. Distribution of volcanoes and evidence of their former existence in Ontario.
 14. Earthquakes:—Upheaval and subsidence of the earth's crust.
 15. General Geological effects produced by Heat, Air, Water, Life.
 16. Stratification—illustrated by beds of sand, clay, rock.
 17. Bosses, Dykes, Veins, Foliation, Dip and Strike, Anticline, Syncline, Faults—meaning and illustration of.
 18. Character and use of Fossils.
 19. Outline of Geological History.
 20. A general Geological map of Canada and of Ontario.
 - Age of the earth (data used in estimation of).

Practical Study of the Courses.

The course proposed above aims at giving

- (1) that general knowledge of the subject which a liberal education demands;
- (2) that knowledge of minerals, their composition, occurrence, distribution and tests, of value to all specially interested in mining operations—the miner, prospector, mining broker, explorer, etc.;
- (3) a knowledge of the interdependence of agriculture, forestry, &c., and geological phenomena and agencies.

The course may be carried out practically by

- (1) making use of the collections of rocks and minerals sent out, on application, by the Geological Survey at Ottawa. (No's 7-12 in the above course may thus be studied)
- (2) by short field excursions to gravel and sand pits, clay beds and limestone exposures for No's 15, 16 and 12 B, at the same time studying the formation, composition, and physical and chemical characters of the soil.

Geological maps of Canada and Ontario for No. 20 may be obtained from the Survey at Ottawa, or the Bureau of Mines at Toronto.

In certain schools favorably situated, other phenomena, 17 and 18, for example, may be illustrated by excursions to actual occurrences.

It is further proposed that the course in Chemistry be so related to the course in Geology and Mineralogy here outlined, that each will gain from the study of the other.

To show what may be done in a practical way in science I quote from a letter to me from Dr. Muldrew, now principal of the Gravenhurst High School; the Arboretum he speaks of is in the school grounds:

"While teaching in Madoc I found it both easy and interesting with the aid of students from different localities to make almost a complete collection of the minerals found so extensively in that part of the province. In Gravenhurst it has been found more practicable and more useful to establish in the same way and for a like purpose an arboretum, where nearly all the indigenous trees and shrubs of the northern forest belt may be seen and studied. There is everywhere abundance of material, for the method is far superior to the matter and when properly presented such work cannot fail to interest permanently. Besides being of great worth in itself, such work is the best introduction to specialized study and will be found equally valuable whether leading to the farm or the University."

Drawing.

The work in Drawing is probably the least satisfactory in our schools. In many localities its value is reported to be small from almost every point of view. The course itself is satisfactory so far as it goes, but it should be more extensive, and our teachers should be better trained. Few, indeed, have had any artistic training. The work I saw in the American Grammar Schools is ahead of that in even our best High Schools. In the American High Schools, it is usually excellent, consisting of industrial drawing of all kinds, drawing from casts and sometimes the living model. Painting in water colors is also common in all the courses. I may say in passing that I did not see or hear of a drawing book; the teacher does the work. The course in Drawing must be emphasized in our schools, for it is the only manual training most pupils can get.

I give below an illustration of what is done in the American schools. The curriculum is that of the W. T. Lincoln Grammar School of Brookline:

- Kindergarten:* Illustration of stories by blackboard drawing in construction.
- Grade I. Autumn:* Drawing of fruits and vegetables with brush and color. Train the eye to see large, simple masses. Muscular control is gained through use of brush.
- Winter:* Large objects, toys, dolls, animals and other things in which children are interested, drawn with color and brush.
- Spring:* Plant and animal life, buds, twigs, leaves, flowers, birds and insects. Use of water-color and colored crayon.
- Grade II.* Subject matter of Grade I, enlarged.
- Grade III. Autumn:* Drawing of autumn flowers, leaves, berries and pods in color. Study of curled leaves, pods, seeds and dried grasses with care in arrangement, using pencil, colored crayon or brush.
- Winter:* Connect drawing with history, literature and geography, using many pictures and illustrating each subject by child's free expression.
- Spring:* Study of life in the vegetable and animal world. Special study of buds and twigs to discover processes of growth.
- Grade IV.* Continue work of third grade, and introduce study of drawings by early Italian masters when feasible: Giotto and his followers.
- Grade V. Autumn:* Drawing in ink or color, fruits and vegetables, including branch or entire plant, leaves, pods, berries and sections, with study of arrangement of seeds. Connect with science and geography.
- Winter:* Invention. Arrangement of straight lines, squares and rectangles. Use motives found in autumn pods, berries and sections for simple repeats. Design Christmas cards, using holly or mistletoe. Simple exercises in composition drawing of line and mass, pose and object drawing in color, ink, or pencil.
- Spring:* Flowers, leaves, insects and bird life. Care in arrangement.
- Grade VI.* Continue work of fifth grade, enlarging the winter design work and in the spring using flowers, leaves and insects as motives for design.
- Grade VII. Autumn:* Flowers and fruits in color; landscape composition; section of vegetables, pods and nuts as motives for design.
- Winter:* Designs from autumn studies in balanced forms. Invention. Study of good examples of art in photography. Draw rectangular forms with attention to proportion and mass. Connect pose drawing with history, literature, and geography.
- Spring:* Drawing from pictures for analysis of line and mass in landscape. Sketching from window landscape, roofs or houses, also from hallways, halls or corners of school room. Study of flowers and leaves with brush in color and ink. Arrangement in rectangles or circles.
- Grade VIII.* Continue work of grade seven, enlarging the winter design and spring landscape work.
- Grade IX. Autumn:* Landscape composition. Drawing in line and mass, from reproductions of pictures by Corot, Millet, etc. Invention. Landscapes. Color used in flat wash in landscape composition. Enlarged drawings of sections of pods, vegetables, etc. Connect with nature study.
- Winter:* Invention. Motives obtained above used in surface repeats in black and white and color. Frequent study of good photographs for design and drawings of old masters. Object drawing and pose drawing in costume to connect with history and literature.
- Spring:* Large drawings of flowers for decorative use in tile plate and surface repeats. Landscape sketching from windows and nature drawing.

PROPOSED DRAWING COURSE FOR ONTARIO SCHOOLS

To give definiteness to my suggestions, I submit the following as a course in Drawing which may be taken up when we have competent teachers and the present examination pressure is reduced or removed:

PUBLIC SCHOOLS.

1. *Object Drawing.* This should in the lowest forms be co-related with Nature study, pupils being taught the drawing of familiar natural objects, such as leaves, flowers, fruits, etc. The objects should be of such a character and so placed as to avoid perspective positions. Memory drawing of the same and similar objects should follow the drawing from the models. The drawing should at first be made in light broken out-

line as unlike ruling as possible. Shading should be introduced at an early stage, but should at first be a mere suggestion.

Young children take a special interest in color. The drawing of natural objects in color may, therefore, with profit be begun in the second form. In fact, in some of the schools of the United States excellent work in color is done by pupils in the lowest grades.

In Form III, the drawing of models of rectangle forms in perspective positions may be introduced, but all technical terms should be avoided. The main aim here should be to teach pupils to see objects and to draw them as they really present themselves.

2. *Designing.* Designing of every kind comes next to the freehand drawing of objects in its adaptability to public school work. It should embrace the principles requisite for the invention of patterns suitable for fabrics, wall-papers, tile floors, etc. A beginning can be made with the youngest pupils in outlining patterns. The spaces may afterwards be filled in with flat color as is done in the making of maps. This is an excellent beginning for more advanced full-colored shaded work.

3. *Copying.* Copying from drawings should be resorted to sparingly, and when demanded of pupils should be mainly for the purpose of improving technique and furnishing ideas for designs.

4. *Elementary Projection.* Where manual training is carried on in Public School classes, the drawing of planes, sections, etc., will of course form a part of all constructive exercises. As commonly taught apart from such exercises, this kind of drawing has but little value.

5. In addition to the subjects already mentioned what may be called Inventive Drawing such as the illustration of lessons, the drawing of imaginary scenes, etc., forms an excellent exercise for the higher forms.

HIGH SCHOOLS.

Forms I. and II.

1. Advanced work in drawing from models in (a) light and shade, (b) color.
2. Memory drawing both in outline and shade.
3. Simple principles of free hand perspective, introducing the more simple terms.
4. Incentive illustrative drawing.
5. Ornamental design, using outline and outline and color, introducing practical geometry and showing its application to design.

Forms III. and IV.

1. Advanced drawing from objects and outdoor work from nature.
2. Charcoal drawing from casts.
3. Ornamental design with color.
4. Projection of solids.
5. Machine drawing with instruments.
6. Styles of architecture and simple architectural drawing.

TEACHERS' EXAMINATIONS.

If we are to have Nature Study in our Public Schools, we must prescribe for the teachers' non-professional examinations our science courses with their practical applications. In the Normal and Model Schools, the teacher will be trained on the pedagogical side, but the High Schools must take a larger part of the instruction. The abolition of the options for this examination in the High Schools, and the effort in the higher grade should ensure wider coverage for the profession. I have pointed out that the drawing of Latin obligatory for the lower grades. (1.) Many pupils now enter Form Latin. Disorganization of the Form + III without any preparation in the subject naturally follow.

(2) All pupils, especially those described in (1) above, spend more time on their Latin at home than on almost any other subject—sometimes more than on all the others put together.

(3.) The result of (2) is that insufficient time is given to preparation in the Public School subjects. Latin is, of course, not wholly to blame, but it is the most important factor in the result.

(4.) The arguments advanced for the study of Latin are the language and the logical training it gives. The one great argument—the inestimable value of its literature—cannot be urged in the case of the large majority of those who take it up in our Schools. Its value in the elementary stages will always be a matter of opinion. In my humble opinion, the discipline of classical study in the stage at which the large majority of our pupils finish it, can be obtained better from studies which touch more closely the practical life of the large body of our population.

But these objections do not hold the same extent against Latin for the second examination. The course represents some culture if the standard is a really good one. No unnecessary pressure will be put upon the pupils of Form I. Many intending teachers will take some Latin before they reach Form V.; and the few who do not, can take two years to prepare Part II. There is force in the objection that the existence of this requirement for the higher and not for the lower grade may prevent some from going on. But, if the standard of the first examination is raised, and especially if salaries increase, it will be worth the teacher's while to prepare himself for the higher grade. I may add that the teacher's courses, while not necessarily identical with those for the University, should include the work therefor, so that no barrier would be placed in the way of those who desire to take a University course. May the time soon come when all our Public and High school masters shall be the cultured products of the best University life!

PRACTICAL COURSES.

In the commercial course, as now, book-keeping and commercial transactions, stenography and type-writing would constitute a part; the obligatory subjects being all taken except, perhaps, Euclid and algebra, in the case of those who remain at school for only a year or so. Flexibility in this course is much to be desired. As to domestic science and manual and technical training, I suggest no detailed courses, partly because my own experience is limited and partly because the details should be left to the Board and a competent staff. In a technical education, English, Mathematics and Science—the last two in their practical applications—should always form an important part; and in the other courses, the obligatory subjects should be prescribed.

AGRICULTURE.

One subject yet remains, representing probably the most important interest in Ontario. Is nothing to be done in our schools for Agriculture? The question of agricultural teaching was one of those considered by the Imperial Commissioners for Ireland on Manual Training and Practical Instruction. The following quotation puts the case admirably even for Ontario:

We are strongly of opinion that even if the instruction were more efficiently given, the subject of Practical Farming forms no fitting part of the programme of a primary school. The details of the art of agriculture can only be learned by practice on a farm and by pupils who are, as a rule, beyond the usual primary school age. The attempt to teach these details theoretically to children of school age can be of little profit. As regards the scientific aspect of agriculture on the other hand, some preliminary training in the simplest elements of Natural and Physical Science is absolutely necessary for a proper appreciation of the bearing of scientific principles on the practice of farming. While therefore we fully recognize the great importance, especially as regards Ireland, of instruction in Practical Farming, we consider that this should be given only in special schools of a technical character.

We are, consequently, of opinion that the course in Agriculture at present prescribed for National Schools should be altered. The new course should consist of instruction in the elements of the Natural and Physical Sciences that have a direct bearing on Agriculture; and this instruction should be given with the aid of experiments of a simple character, performed as far as possible by the pupils themselves. Such a course of instruction will be of a nature entirely within the capacity of the children of a primary school. It will afford a good disciplinary training for all children, even for those who are not to be subsequently engaged in the practice of agriculture, while it will enable those who are to be so engaged, at a later stage to make intelligent use of scientific treatises on the subject.

The course in Agriculture, thus modified, will naturally constitute the course in Elementary Science for boys in rural schools.

In this connection we beg to draw attention to the following extract from a publication recently issued by the French Government on the "Teaching of Elementary Ideas of Agriculture in Rural Schools," which clearly expresses our views on the matter:

"Instruction in the elementary principles of agriculture, such as can be properly included in the programme of primary schools, ought to be addressed less to the memory than to the intelligence of the children. It should be based on observation of the everyday facts of rural life, and on a system of simple experiments appropriate to the resources of the school, and calculated to bring out clearly the fundamental scientific principles underlying the most important agricultural operations. Above all, the pupils of a rural school should be taught the reasons for these operations, and the explanations of the phenomena which accompany them, but not the details of methods of execution, still less a resume of maxims, definitions or agricultural precepts. To know the essential conditions of the growth of cultivated plants, to understand the reasons for the work of ordinary cultivation, and for the rules of health for men and domestic animals—such are matters which should first be taught to everyone who is to live by tilling the soil; and this can be done only by the experimental method.

"The master whose teaching of agriculture consists only in making the pupils study and repeat an agricultural manual, is on the wrong path, however well designed the manual may be. It is necessary to rely on very simple experiments, and especially on observation.

"As a matter of fact, it is only by putting before the children's eyes the phenomena to be observed, that they can be taught to observe, and that the principles which underlie the science of modern agriculture can be instilled into their minds. It should be remembered that this can be done for the rural agriculturist only at school, where it will never be necessary to teach him the details which his father knows better than the teacher, and which he will be certain to learn from his own practical experience.

"The work of the elementary school should be confined to preparing the child for an intelligent apprenticeship to the trade by which he is to live, to giving him a taste for his future occupation; with this in view, the teacher should never forget that the best way to make a workman like his work, is to make him understand it."

What we can do and all we can do in our Public and High Schools, is to construct our school courses so that they bear upon agriculture. Mr. James's very excellent manual can be taken up by the teacher as part of the Nature Study of the Public Schools, and of the Elementary Science courses of the High Schools; and the Science of Forms IV. and V. can, as I have shewn, be adapted to the same purpose. No country has succeeded in doing more than this. The farmers' laboratory is too large for any school but the special one. In Part I. I stated that I had visited the agricultural department at Cornell; I had heard that it had done something for the Public Schools of New York State. Part of its extension work I find, consists of summer lectures on Nature Study, and the regular publication of leaflets on the same subject (widely distributed) for the use of the primary teachers. These give the Nature Study an agricultural turn, and Prof. Bailey tells me that they are very popular and that the results have been exceedingly gratifying. Some of the titles of these pamphlets now before me are:

A Children's Garden, Cuttings and Grafts, The Burst of Spring, A Brook, How Plants Live Together, Hints on Making Collections of Insects, The Leaves and Acorns of our Common Oaks, The Life History of the Toad, The Birds and I, How the Trees Look in Winter, Evergreens and how they shed their Leaves, Autumn Leaves, A Summer Shower, A Handful of soil, The Potato.

This scheme is, of course, practicable for us, and it could be carried on under the direction of the Minister of Education or the Minister of Agriculture. In our new-born zeal for Industrial Education, it will not do to subordinate the claims of other departments of at least equal importance.

U. S. ENGLISH AND LATIN HIGH SCHOOLS.

Although the special object of my visit to the United States was the Manual Training School, I visited besides a good many of the co-ordinate English and Latin Schools. In many of the larger cities, as in Boston, Cambridge, Providence, and New Haven, the English and the Latin schools are differentiated in organization. In others, both the English and the Latin courses are taken in the same building under the same principal, as in Chicago and Springfield; or under different principals, as in Lynn. The courses of study and their organization differ from ours chiefly in their flexibility (their "electives" and "options"), the smaller amount of work taken by a pupil both each day and during a session; and, in our judgment, the short time in which the studies are "completed." One of the leading educationalists I met told me that a sufficient course in Algebra, for example, was provided for a high school pupil if he had it the first and the fourth year of his course. He was amazed when I explained our programme. The want of continuity of the subjects in many schools is probably the worst defect of their organization. There can be no doubt whatever that even the best schools

are much behind our average school in what we consider thoroughness. The Boston scheme of study shows fewer of the peculiarities of the American system than most of the others I know of; and, as it will prove very suggestive to the Ontario educationalist, I give it here: the sanity and naturalness of the prescribed methods are much to be commended. Graduates of the Grammar Schools (from the ninth grade) are admitted to the English and the Latin High Schools without examination. Other pupils may be admitted to the Latin Schools who are at least eleven years old and have passed an examination equivalent to that required for admission to the seventh grade of the Grammar Schools (about our senior fourth form).

COURSES OF STUDY: BOSTON HIGH SCHOOLS.

LATIN HIGH SCHOOLS.

The Latin Schools are to be in session five hours a day for five days of the week. Of the five hours a day, a quarter of an hour is assigned to the opening exercises, and half an hour to recesses. The average length of an "hour" for class exercises or for study is about fifty minutes. Of the twenty-five school "hours" in a week, twenty hours are to be given to class exercises, and five hours—one each day—to study. The study hour and the recitation or exercise hour may be divided into two or more periods, according to the needs of the pupils and the exigencies of the programme.

Pupils will not be required to make preparation for more than fifteen lessons or exercises a week. Members of the three lower classes will be required to study out of school not more than ten hours a week; and members of the upper classes, not more than twelve hours a week.

The regular course of study is for six years. But pupils that have been graduated from a grammar school or have substantially done the whole or a part of the work of the lowest class or classes, may enter a higher class. Pupils, too, whose health and scholarship are good, may complete the regular course of study in less than six years. For good reasons pupils may spend more than six years in completing the course of studies, or may omit one or more studies of the course.

The Board of Supervisors grants diplomas to pupils that have completed the course of study, and certificates of proficiency to such as have completed a part of the course.

The number in brackets after a subject is the number of "hours" given it a week.

CLASS VI. (LOWEST.)

ENGLISH (6).—1. Reading aloud or silently (a) Hawthorne's *Wonder Book* and *True Stories*; (b) either Tom Brown's *School Days* at Rugby or Charles and Mary Lamb's *Tales from Shakespeare*; (c) some lives of persons famous in American history and descriptions of its important events.

2. (a) Reading aloud, committing to memory and reciting prose selections from standard authors and some of Whittier's and Longfellow's poems. (b) Exercises for cultivating clear and distinct utterance in speaking, reading, and reciting.

3. (a) Oral and written reproductions or abstracts of the history and of other reading lessons. (b) Oral and written descriptions of visits to historic places, buildings and monuments in and about Boston. (c) Conversations and written exercises on good morals and good manners.

4. (a) The analysis of sentences; the classification of words as parts of speech; changes in the form of words; and principles of syntax. (b) Penmanship; and exercises in copying, in writing from dictation and in reproduction for the purpose of training in correct spelling, punctuation, and forms of written compositions.

NOTE 1: (a) Teachers should recommend for home reading suitable books that may be taken from the school or from the Public Library. (b) Pieces should be committed to memory and recited, not chiefly for the purpose of "declamation,"—however valuable that may be,—but for the purpose of filling the mind with good thoughts and beautiful and noble sentiments, and of expressing these in a clear and distinct voice and in a simple and suitable manner. (c) Nearly every oral or written exercise of the school gives an opportunity for teaching English.

LATIN: (5). 1. Regular forms, with simple exercises illustrating their use.

2. (a) Oral and written translation of easy Latin into English. (b) Unprepared translation of easy Latin with the help of the teacher.

3. (a) Reading aloud, copying and writing from dictation, Latin simple in construction and composed of words familiar to the pupils. (b) Simple oral and written translation of English into Latin.

NOTE 2: Beginners in Latin should hear much easy Latin read and translated and should read aloud the same or similar passages and translate them into English so that Latin words, the changes in their forms, and the force of these changes may become familiar. A few Latin words should be added, each day, to the vocabulary of the pupils.

HISTORY: See English. (a) Reading lives of persons famous in American history and descriptions of its important events; and making oral or written reproductions or abstracts of the same. (b) Oral and written descriptions of visits to historic places, buildings and monuments in and about Boston.

NOTE 3: The reading of history lessons should be accompanied and followed by collateral reading and by conversations upon prominent and interesting events. There should be, of course, no attempt to load the memory with unimportant facts and dates. The main purposes should be (1) to train the pupils to grasp mentally the leading events in their order, and (2) to induce or arouse an interest in historical reading.

NOTE 4: If the teacher of history be not also the teacher of English, they will form together such a plan of work as will economize the time of each.

GEOGRAPHY: (3) Physical and political geography of (a) the United States; (b) the countries of Europe; (c) the remaining countries of North America.

ELEMENTARY SCIENCE: (4). Physiology and hygiene.

NOTE 5: The requirements of the law are to be observed as to teaching "the effects of alcoholic drinks, stimulants and narcotics on the human system."

NOTE 6: The time in the year for beginning or closing a study may be determined by the principal; but the class must give to each the study the aggregate time prescribed.

MATHEMATICS: (4). 1. Arithmetic. (1) Oral exercises with simple numbers, arithmetic at sight, and written arithmetic. (a) Reviews of Grammar School work. (b) The metric system. (c) Percentage and its applications to commission, profit and loss, and other simple subjects, and to simple interest. 2. Observational geometry: (3).

NOTE 7: Pupils are to observe, measure and represent solids, surface, and lines, and to infer, express, and use simple geometrical truths.

PHYSICAL TRAINING AND SINGING: (2) Gymnastics and singing, for girls. Gymnastics, for boys.

CLASS V.

ENGLISH: (6). 1. Reading aloud or silently (a) Hawthorne's *Tanglewood Tales*; (b) either Kingsley's *Greek Heroes* or selections from Scott's *Tales of a Grandfather*; (c) some lives of persons famous in English history and descriptions of its important events.

2. (a) Reading aloud, committing to memory, and reciting prose selections from standard authors, and some of Holmes's, Bryant's, and parts of Scott's poems. (b) Exercises for cultivating clear, distinct, forcible, and expressive utterance in speaking, reading, and reciting.

3. (a) Oral and written reproductions or abstracts of the history and of other reading lessons. (b) Conversations and written exercises on good morals and good manners.

4. (a) Analysis of sentences; inflections of words and principles of syntax. (b) Penmanship: exercises in writing from dictation and in reproduction for the purpose of training in spelling, punctuation, and forms of written composition. (See Note 1, under Class VI.)

LATIN: (5). 1. Forms and constructions with exercises thereon.

2. Oral and, occasionally, written translation into idiomatic English (a) of easy Latin and (b) at least of Books I., II., and III. of Caesar's *Gallie War*. (c) Unprepared translation of easy Latin.

3. (a) Reading aloud, copying, and writing from dictation, familiar passages from Caesar. (b) Repeating aloud or writing passages from Caesar that have been carefully studied and committed to memory.

4. English into Latin, including simple oral and written exercises based upon passages from Caesar. (See Note 2, under Class VI.)

HISTORY: See *English*. Reading lives of persons famous in English history and descriptions of its important events; and making oral and written reproductions or abstracts of the same. (See notes 3 and 4 under class VI.)

GEOGRAPHY: (2). 1. Physical and political geography, with map-drawing of (a) the countries of South America; (b) the West Indies, etc.; (c) the countries of Asia and of Africa; (d) Australia, Malaysia, and other islands of the Pacific.

2. Physical and astronomical geography.

3. Reviews.

ELEMENTARY SCIENCE: (4). Botany, inductively studied.

NOTE: The time in a year for beginning or closing a study may be determined by the principal; but the class must give to each study the aggregate time prescribed.

MATHEMATICS: (4). 1. Arithmetic (3). (1) Exercises with simple numbers, arithmetic at sight, and written arithmetic: (a) Application of the principles of percentage to bank discount, partial payments, and compound interest. (b) Compound numbers, with simple practical problems. (c) Ratio and proportion. (d) Powers: square root and its common applications, cube root with simple practical problems. (e) The algebraic expression of the generalizations of arithmetic and the solution of simple algebraic equations expressing arithmetical facts or truths.

2. Geometry: (3). Observational geometry, including the mensuration of parallelogram, triangle, trapezoid, trapezium, circle and any other plane figure divisible into triangles; of the right prism, pyramid, cylinder and cone; and of the sphere. (See Note 7, under Class VI.)

PHYSICAL TRAINING AND SINGING. (2). As in Class VI.

CLASS IV.

ENGLISH: (5). 1. Reading aloud or silently (a) Irving's *Sketch Book*; (b) Church's *Stories of the Old World*; and (c) Plutarch's *Lives of Famous Greeks*. (d) Reading descriptions of and studying the great events in the history of ancient Greece. (e) Reading astronomical and physical geography.

2. (a) Reading aloud, committing to memory, and reciting prose selections from standard authors, and some of Lowell's, Gray's and parts of Goldsmith's poems. (b) Exercises for cultivating clear, distinct, forcible and expressive utterance in speaking, reading and reciting.

3. (a) Oral and written reproductions or abstracts of lectures of historical, geographical, and other readings. (b) Compositions—chiefly narratives and descriptions. (c) Applications of the principles of good English to the correction of mistakes made by the pupils in speaking and writing.

NOTE 1: The pupils are now old enough to begin to appreciate literature as such. The purpose and spirit of the author and the merits of his thought and style should be pointed out. His defects should be but lightly touched.

FRENCH OR GERMAN: (3). (a) Translating into English, reading aloud, and, immediately after the teacher, repeating aloud, easy French or German. (b) Simple exercises in pronunciation and conversation based on this French or German. (c) Unprepared translation of easy French or German into English.

2. (a) Oral and written practice in the forms and use of nouns, pronouns, adjectives, articles, regular verbs, and at least twenty irregular verbs.

3. Simple oral and written translations of English into French or German.

NOTE 2. Pupils should, with the help of the teacher, read, at the outset, French or German, and translate it into English. They should be trained to observe forms and idioms and the force of these, and thus should acquire some real knowledge of the foreign language before they begin to study its formal grammar.

LATIN: (5). 1. Oral and, occasionally, written translation, at least, (a) of Books IV. and V. of Caesar's Gallic War; (b) of 1,000 lines of Ovid; and (c) of Book I. and a part of Book II. of the *Æneid*. (d) Unprepared translation of average passages from Caesar and of the easier passages from Ovid.

2. (a) Writing from dictation and committing to memory, passages from Caesar. (b) Reading metrically and committing to memory passages from Ovid.

3. English into Latin, including oral and written exercises based upon passages from Caesar or upon other Latin prose that the pupils have translated into English.

NOTE 3: Pupils should be induced to translate much Latin into English. To this end the teacher should occasionally translate and comment upon the more difficult passages; should cause the brighter pupils to translate at sight average passages, and the average pupils to translate at sight the easier passages, and should skilfully remove the difficulties that obstruct the way of the duller pupils.

NOTE 4: In March, the study of Greek may be begun; but the time is taken from other studies of Class IV. should be restored to the same studies of Class III.

HISTORY: See English. Reading Plutarch's Lives of Famous Greeks; reading descriptions of and studying the great events in the history of ancient Greece; and making oral and written reproductions or abstracts of the same.

NOTE 5: Pupils in Class IV. are old enough to begin to appreciate causes and consequences of historical events and to form clear conceptions of the life of the people whose history they are reading. Teachers should use statuary, paintings, engravings, photographs, and other available historic illustrations (at the Art Museum and elsewhere), and should read to the pupils, or cause them to read, such extracts from standard historical writers as distinctly and vividly portray famous men and events.

ELEMENTARY SCIENCE: 3 (a) Botany, inductively studied. (b) Physiology and hygiene.

NOTE 6: The time in the year for beginning or closing a study may be determined by the principal; but the class must give to each study the aggregate time prescribed.

MATHEMATICS: 4. Algebra, including (a) generalizations of arithmetic and of observational geometry, and (b) the solution of equations expressing arithmetical and simple geometrical facts and truths.

PHYSICAL TRAINING AND SINGING: 2. Details as in Class VI.

CLASS III.

ENGLISH: (5). 1. Reading aloud or silently (a) Addison's papers in the *Spectator*; (b) one of Scott's novels; (c) Plutarch's Lives of Famous Romans; and (d) Macaulay's Lays of Ancient Rome; (e) Reading descriptions of and studying the great events in the history of ancient Rome.

2. (a) Reading aloud, committing to memory and reciting prose selections from standard authors, and either some poems of Tennyson, Emerson and Wordsworth, or a part of the English and American poems whose study is required for admission to college. (See under Class II.) (b) Exercises for cultivating clear, distinct, forcible and expressive utterance in speaking, reading and reciting.

3. (a) Oral and written reproductions or abstracts of lectures and of the history and other reading lessons. (b) Compositions. (c) Some study of English as used by the best authors; and exercises for training pupils to correct their own mistakes in speaking and writing. (See Note 1, under Class IV.)

FRENCH OR GERMAN: (2) 1. (a) Reading aloud and translating into idiomatic English, French or German suited to the progress of the class. (b) Simple exercises in conversation based on this French or German. (c) Unprepared translation of easy French or German into English.

2. Forms reviewed and irregular forms studied, with exercises thereon.

3. (a) Writing from dictation or from memory French or German containing only familiar words and forms and common constructions. (b) Simple oral and written translations of English into French or German, including exercises based upon passages already translated into English.

NOTE 1: (See Note 2, under Class IV.) Most of the time assigned this year to French or German should be used by the pupils in reading the foreign language and translating it into English. Occasionally there should be practice in getting thoughts directly from the French or German without translating it into English.

LATIN: (4). 1. Oral and, occasionally, written translation (a) of the remainder of Book II., and the whole of Books III., IV. and V. of the *Æneid*; (b) of Sallust's *Catiline*; and (c) of, at least, one of Nepos's Lives. (d) Unprepared translation of average passages from Caesar and of the easier passages from Sallust, Nepos, and Vergil.

2. (a) Writing from dictation and committing to memory passages from Sallust or Nepos. (b) Reading metrically and committing to memory passages from Vergil.

3. English into Latin, including oral and written exercises based upon passages from Caesar, Sallust or Nepos. (See Note 3, under Class IV.)

GREEK: (5) 1. Forms and constructions with simple exercises illustrating their use.

2. (a) Oral and written translation of easy Greek into English. (b) Oral translation of, at least, a part of Book I. of the *Anabasis*, or of easy passages from any other work of Xenophon. (c) Unprepared translation of easy Greek, with the help of the teacher.

3. (a) Reading aloud, copying and writing from dictation Greek simple in construction and composed of words familiar to the pupils. (b) Simple oral and written translation of English into Attic Greek, including exercises based upon passages from Book I. of the *Anabasis* or from any other work of Xenophon that the pupils have begun to translate into English.

NOTE 2: That pupils may, early in the course, acquire some knowledge of the Greek language as a foundation for their study of its formal grammar, they should read aloud and should hear the teacher read much connected Greek, and should, with his help, translate it into English. They would thus gradually learn, through ear and eye, changes in the forms of words and, through the understanding, the force of these changes; and, at the same time, interested in the connected narrative, would gain daily in the power of translating readily Greek into English.

HISTORY: See *English*. Reading Plutarch's Lives of Famous Romans, and Macaulay's Lays of Ancient Rome; reading, descriptions of and studying the great events in the history of ancient Rome; and making oral and written reproductions or abstracts of the same. (See note 5, under Class IV.)

MATHEMATICS: Algebra; review of arithmetic and of observational geometry; applications of algebra to arithmetic and to the elements of geometry.

NOTE 3: With the aid of algebra, Class III. can thoroughly study some arithmetical subjects, e. g., powers and roots—that were only lightly touched in the lower classes. Near the close of this school-year, the final examination in Arithmetic should be given.

PHYSICAL TRAINING AND SINGING: (2) As in Class VI.

CLASS II.

ENGLISH: (4) 1. Reading aloud or silently and studying (a), at least, one play of Shakespeare; and (b) a part of the English literature required for admission to college. (c) Reading descriptions of and studying the great events in the history of ancient Greece and Rome.

2. (a) Committing to memory and reciting selections from standard authors of prose and poetry. (b) Exercises for cultivating correct and expressive utterance.

3. (a) Oral and written reproductions or abstracts of lectures and of the history and other reading lessons. (b) Compositions. (c) Some critical study of standard English prose as to correctness, perspicuity, and force; and exercise for training pupils to correct their own mistakes in speaking and writing.

NOTE 1: The course of study in English literature for Classes I. and II. is largely determined by the requirements for admission to New England colleges. These requirements in English literature for the years 1901-1905 are given below. Of course, the authors there mentioned should be mainly studied for their literature. If the pupils will but read with a genuine interest and with a fair appreciation of thought and sentiment, not only will their standard of reading and thinking be raised and their literary taste improved, but also their ability to use good English will be increased. Merits rather than defects in the exercises used for improving style of expression should be emphasized. Indeed, if pupils do not violate the principles of good use, they will not need to correct the solecisms and barbarisms of others; and if, on the other hand, they use bad English, it will be sufficient for them to correct their own mistakes and blunders.

1901 and 1902. Shakespeare's Merchant of Venice; Pope's Iliad, Books I., VI., XXII., and XXIV. The Sir Roger de Coverley Papers in the Spectator; Goldsmith's Vicar of Wakefield; Coleridge's Ancient Mariner; Scott's Ivanhoe; Cooper's Last of the Mohicans; Tennyson's Princess; Lowell's Vision of Sir Launfal; George Eliot's Silas Marner; Shakespeare's Macbeth; Milton's Lycidas, Comus, L'Allegro, and Il Penseroso; Burke's speech on Conciliation with America; Macaulay's Essays on Milton and Addison.

1903, 1904, and 1905. Shakespeare's Merchant of Venice; Shakespeare's Julius Caesar; The Sir Roger de Coverley Papers in the Spectator; Goldsmith's Vicar of Wakefield; Coleridge's Ancient Mariner; Scott's Ivanhoe; Carlyle's Essay on Burns; Tennyson's Princess; Lowell's Vision of Sir Launfal; George Eliot's Silas Marner; Shakespeare's Macbeth; Milton's Lycidas, Comus, L'Allegro, and Il Penseroso; Burke's speech on Conciliation with America; Macaulay's Essays on Milton and Addison.

FRENCH OR GERMAN: (2) 1. (a) Reading aloud, without translating into English, some easy French or German prose. (b) Conversations based on this French or German. (c) Production of stories or of other simple French or German heard or read by the pupils.

2. (a) Oral and written translations into idiomatic English of some modern French or German prose and poetry suited to the progress of the class; also, if time permit, of one or more French or German classics. (b) Unprepared translations of easy and average passages from French or German into English.

3. (a) Study of irregular forms and unfamiliar constructions, with exercises thereon. (b) Translation of English into French, including oral and written exercises based upon passages selected from the authors studied.

NOTE 2: The French or German read this year should be mainly nineteenth century prose, and should include not only fiction but also biography and history.

(1) To translate readily French or German into idiomatic English, and (2) to acquire and appreciate the author's thoughts through reading the foreign language without translating it into English, are the two main objects of its study in the Latin School. While accomplishing these objects, the pupils should acquire a correct pronunciation and a familiarity with forms and syntax, and should begin to compose and converse in the foreign language.

LATIN: (4) 1. Oral and, occasionally, written translation (a) of, at least, three more books of the Aeneid and the Eclogues of Virgil; (b) of, at least, four orations of Cicero; and (c) of some of Nepos's Lives. (d) Unprepared translation of average passages from Caesar and Nepos, and of the easier passages from Vergil and Cicero.

2. (a) Writing from dictation and committing to memory passages from the prose writers studied; and (b) reading metrically and committing to memory passages from Vergil.

3. English into Latin, including oral and written exercises based upon passages from Caesar, Nepos, or Cicero. (See Note 3, under Class IV.)

GREEK: (5) 1. Forms, constructions, and idioms, with exercises thereon.

2. (a) Oral and written translations into idiomatic English of, at least, Books I. IV. of the Anabasis or its equivalent. (b) Unprepared translation of simple Attic prose. (c) Reading aloud, writing from dictation, and committing to memory familiar passages from Greek.

3. English into Greek, including oral and written exercises based upon passages from Attic prose. (See Note 2, under Class III.)

HISTORY: See *English*. Reading descriptions of and studying the great events in the history of ancient Greece and Rome; and making oral and written reproductions or abstracts of the same. (See Note 5, under Class IV.)

MATHEMATICS: (3) (a) Algebra through quadratic equations. (b) Plane geometry, begun.

PHYSICAL TRAINING AND SINGING: (2) As in Class VI.

CLASS I.

ENGLISH: (2) 1. (a) Reading aloud or silently and studying the English literature required for admission to college. (b) Oral and written abstracts and interpretations of a part of the works read or studied.

2. (a) Committing to memory and reciting selections from standard authors of prose and poetry. (b) Exercises for cultivating correct and expressive utterance.

3. (a) Compositions. (b) Some critical study of standard English prose as to correctness, propriety, perspicuity, and force; and exercises for training pupils to correct their own mistakes in speaking and writing. (See Note 1, under Class II.)

LATIN: (4) 1. Prepared and unprepared translation, oral and written, from Vergil and Cicero.

2. (a) Writing from dictation and committing to memory passages from Cicero; and (b) reading metrically and committing to memory passages from Vergil.

3. English into Latin, including oral and written exercises based upon passages from Nepos, Caesar, or Cicero. (See Note 3, under Class IV.)

NOTE 1: The productions of Latin and Greek authors should now be read and interpreted as literature. However valuable the study of Latin and Greek grammar may be made, it should be kept strictly subordinated to the study of the Latin and Greek literature read.

GREEK: (4) 1. Translations from Attic prose and from Homer, including unprepared translations of average and easier passages.

2. Reading metrically and committing to memory passages from Homer.

3. English into Greek, including oral and written exercises based upon passages from Attic prose. (See Note 1, under Latin.)

ELEMENTARY SCIENCE: (3) Physics, studied inductively and experimentally.

NOTE 2: The time in the year for beginning and closing a study may be determined by the principal; but the class must give to each study the aggregate time prescribed.

MATHEMATICS: (4). Either plane geometry, completed; or plane geometry, completed, and solid geometry, studied.

NOTE 3: A part of the regular work in geometry should be original demonstrations of theorems and applications of geometrical truths in the solution of problems.

PHYSICAL TRAINING AND SINGING: (5), as in Class VI.

NOTE 4: To meet the special needs of some pupils, they will be allowed—if the circumstances of the school permit and the head-master consent—(a) to substitute the history of the United States and England for the history of Greece and Rome; (b) to substitute advanced French, or advanced physics, or advanced algebra together with logarithms and trigonometry, for advanced Greek; (c) to substitute in the boys' school elementary German for that part of advanced Latin or advanced Greek studied by Class I; and (d), to "anticipate" studies of the Freshman year.

GIRLS' LATIN SCHOOL.

COURSE OF STUDY IN ELEMENTARY AND ADVANCED GERMAN.

NOTE 1: The course of study in elementary and advanced German may be taken by pupils in the Girls' Latin School instead of the course in elementary and advanced Greek.

CLASS III.

ELEMENTARY GERMAN: (5.) 1. (a) Translating into English, reading aloud, and, immediately after the teacher, repeating aloud, easy German. (b) Simple exercises in pronunciation and conversation based on this German. (c) Unprepared translation of easy German into English. (d) Committing to memory and reciting German poetry.

2. Oral and written practice in the forms and use of nouns, pronouns, adjectives, articles, regular verbs, and all the common irregular verbs, and in the construction of easy sentences.

3. (a) Writing German from dictation or from memory. (b) Simple oral and written translation of English into German.

NOTE 2: Pupils should, at the outset, read German with the help of the teacher, and translate it into English. They should be trained to observe forms and idioms and the force of these; and thus should acquire some real knowledge of the German language before they begin to study its formal grammar.

CLASS II.

ELEMENTARY GERMAN: (5.) 1. (a) Reading aloud and translating into idiomatic English German suited to the progress of the class. (b) Sight translation of German into English. (c) Simple exercises conducted in German on what has been translated at sight into English. (d) Committing to memory and reciting German poetry.

2. The review of forms and the study of irregular verbs and of constructions, continued, with exercises thereon.

3. (a) Oral and written reproduction of stories or of other simple German heard or read by the pupils. (b) Oral or written translation of English into German.

NOTE 3. The German read this year should be mainly nineteenth century prose, and should include biography and history, as well as fiction. The German language is, whenever it is practicable, to be used in the class-room.

CLASS I.

ADVANCED GERMAN: (4.) 1. (a) Translating into idiomatic English German prose and poetry suited to the progress of the class, including two or more German classics. (b) Sight translation of German into English. (c) Committing to memory and reciting German poetry. (d) Reading aloud, without translating into English, German prose of ordinary difficulty. (e) Conversation in German.

2. Review of German grammar, a German text-book in grammar to be used, and the recitations to be conducted in German.

3. Free composition in German, including composition on subjects drawn from German books previously read.

NOTE 4: (1) To translate readily German into idiomatic English, and (2) to acquire and appreciate the author's thoughts through reading the German without translating it into English, are the two main objects of its study in the Latin Schools. While accomplishing these objects, the pupils should acquire the correct pronunciation of German and become familiar with its forms and syntax, and should, at the close of the third year of study, be well started in German conversation and composition.

ENGLISH HIGH SCHOOLS.

The general provisions are the same as for the Latin Schools, with the following modifications:—
If pupils are unable, from ill-health or for other reasons, to pursue in full the regular course of study, or if the interests of pupils require them to omit a part of the course, the principal may allow such pupils to pursue partial courses of study, and to continue them from year to year; but diplomas of graduation cannot be awarded pupils until they have completed the regular course of study.

FIRST YEAR.

ENGLISH: Four hours a week till March 1; one hour a week after March 1. English Language and Literature.

HISTORY: (2). Ancient History.

FOREIGN LANGUAGE (See Note 1): (4 or 5). French, German or Latin.

MATHEMATICS: Either five or four hours a week till March 1; either four or three hours a week after March 1. Algebra, with generalizations of Arithmetic.

SCIENCE: Four hours a week after March 1. Botany.

DRAWING: (2).

MUSIC (See Note 2): (1). Singing.

PHYSICAL TRAINING: (2). Gymnastics for girls. Gymnastics and Military Drill for boys.

NOTE 1: The choice of a study must be subject to the approval of the principal.

NOTE 2: Pupils excused from singing must do additional work in some other study of the regular course.

SECOND YEAR.

ENGLISH: (3). English Language and Literature.

HISTORY: (2). Medieval History. Modern History begun.

FOREIGN LANGUAGE: (3 or 4). French, German or Latin continued.

MATHEMATICS: (3 or 4). Plane Geometry.

SCIENCE (See Note 1): (3). Zoology; followed by a short course in Physiology and Hygiene.

DRAWING: (2).

MUSIC (See Note 2): (1). Singing.

PHYSICAL TRAINING: (2). Gymnastics for girls. Gymnastics and Military Drill for boys.

ELECTIVES (See Note 3): Elective substitute for Zoology: Book-keeping, including Commercial Arithmetic.

NOTE 1: Pupils intending to enter the Normal School are advised to study Zoology.

NOTE 2: Pupils excused from singing must do additional work in some other study of the regular course.

NOTE 3: The choice of a study must be subject to the approval of the principal.

THIRD YEAR.

ENGLISH: (3). English Language and Literature.

HISTORY AND CIVIL GOVERNMENT: (3). Modern History. Civil Government.

FOREIGN LANGUAGE (See Note 1): (3). Either (a) French, German or Latin continued, or (b) French or German begun.

MATHEMATICS: (3). Algebra and Plane Geometry completed.

SCIENCE: (6). Physics, three hours. Chemistry, three hours.

MUSIC (See Note 2): (1). Singing.

PHYSICAL TRAINING: (2). Gymnastics for girls. Gymnastics and Military Drill for boys.

ELECTIVES (See Note 1): Elective substitute for Foreign Language: Phonography. Elective substitute for Mathematics: Drawing.

NOTE 1: The choice of a study, and changes in the choice of a foreign language, must be subject to the approval of the principal.

NOTE 2: Pupils excused from singing must do additional work in some other study of the regular course.

FOURTH YEAR.

REQUIRED ENGLISH: (3). Rhetoric and Composition.

MUSIC (See Note 1): (1) Singing.

GYMNASTICS: (2).

ELECTIVES. (see Note 2). (12). English Literature; History; French; German; Latin; Advanced Algebra, Solid Geometry, Plane Trigonometry with application to Surveying and Navigation, Analytic Geometry; Physics, Chemistry, Astronomy (See Note 3); Drawing; Phonography.

NOTE 1: Pupils excused from singing must do additional work in some other study of the regular course.

NOTE 2: The choice of studies must be subject to the approval of the principal.

NOTE 3: Pupils intending to enter the Normal School are advised to study Astronomy.

NUMBER OF HOURS A WEEK TO BE GIVEN TO THE SEVERAL ELECTIVE STUDIES OF THE FOURTH-YEAR CLASS.

ENGLISH LITERATURE: Either 1 hour or 2 hours a week. This time is in addition to the 3 hours a week given to required "Rhetoric and Composition."

HISTORY: (2).

FOREIGN LANGUAGES: (3 or 4 each). Credit in hours to be given to only two of the three foreign languages.

MATHEMATICS: Advanced Algebra, (2); Solid Geometry, (2); Plane Trigonometry with applications to Surveying and Navigation, (2); Analytic Geometry, (2). Credit in hours to be given to only three of the four branches of Mathematics.

SCIENCES: Physics, (3); Chemistry, (3); Astronomy, (3). Credit in hours to be given to only two of the three Sciences.

DRAWING: (2).

PHONOGRAPHY: 3 hours a week, for pupils beginning the study; 2 hours a week for pupils continuing the study.

HIGH SCHOOL COMMERCIAL COURSE.

FIRST YEAR.

ENGLISH: *Four hours a week till March 1; one hour a week after March 1.* English Language and Literature.

HISTORY: (2). Ancient History.

PHONOGRAPHY, PENMANSHIP, AND COMMERCIAL FORMS: (4 or 5).

COMMERCIAL ARITHMETIC AND BOOKKEEPING BEGUN: *Either five or four hours a week till March 1; either four or three hours a week after March 1.*

SCIENCE: *Four hours a week after March 1.* Botany.

DRAWING: (2).

MUSIC (See Note 1): (1). Singing.

PHYSICAL TRAINING: (2). Gymnastics for girls. Gymnastics and Military Drill for boys.

NOTE 1: Pupils excused from singing must do additional work in some other study of the course.

SECOND YEAR.

ENGLISH: (3). English Language and Literature.

HISTORY: (2). Medieval History, (2). Modern History.

PHONOGRAPHY, TYPEWRITING, AND ELEMENTS OF MERCANTILE LAW: (3 or 4).

BOOKKEEPING AND COMMERCIAL GEOGRAPHY: (3 or 4).

SCIENCE: (3). Zoology; followed by a short course in Physiology and Hygiene.

DRAWING: (2).

MUSIC (See Note 1): (1). Singing.

PHYSICAL TRAINING: (2). Gymnastics for girls. Gymnastics and Military Drill for boys.

NOTE 1: Pupils excused from singing must do additional work in some other study of the course.

GENERAL CONSIDERATIONS.

Public and School Libraries.

A few matters of a general nature need to be considered in connection with the subjects I have been discussing :

In 1899, this Province spent \$56,769.77 in books, and \$11,045.60 in magazines and periodicals for its public libraries. Of this amount, the Legislature gave \$44,748.97. Let us consider, in this connection, the following facts also contained in the Educational Report for 1899. There are 5,120 rural public schools and 204 rural separate schools, outside of the schools in the cities, towns, and incorporated villages. In 30 of these municipalities, there are no public libraries, while outside of them there are only 196; that is, there are over 5,000 rural school sections which the public library does not reach, and which, so far as I can find out, have few, if any, libraries of any kind. I have already shewn how important it is that a taste for good literature should be cultivated in all our schools, in the Public Schools in particular, where the large body of our people receive their education. Is our library system as effective as it can be made? I doubt it very much; and I have two suggestions to offer for its improvement :

(1) Where Public Schools now exist, the Library Boards should co-operate with the School Boards, and their teachers. The good librarian knows much about books and something about children; the good teacher knows much about children and something about books. In many of the U.S. cities and towns I visited, special provision is made in the Public Libraries for the wants of both pupils and teachers. Books suitable for them are bought, and arrangements made for their distribution. Selected sets, often to the number of two or three hundred volumes, classified for the different grades and consisting of 20 or 25 copies of each book, are sent at the beginning of a term to the Grammar and the High School. As soon as one set is read, it is replaced by another, at the request of the Principal; and the reading of such books in school and at home, under the teacher's guidance, is made a prominent feature of the course. Teachers also have special privileges, being allowed to take out from half a dozen to a dozen or so at a time. Another illustration may be given of this system of co-operation. In Belleville (Ill.), the State Superintendent tells me, some years ago, under the direction of the Superintendent of Schools, every teacher read a given number of books, classified them for the school grades, and reported to a committee appointed to group them. Lists were then printed on large cards which were placed in the library for the use of the children. New book lists are posted in the same way. At the approach of national days like Washington's and Lincoln's birthday, Memorial day and others, when the older pupils are assigned themes or questions for debate, the teachers give the librarians the subject, and the books treating of them are placed upon the inspection table for their use. Moreover, the teachers' own pedagogical library has been placed in a separate case in the library and is cared for by the librarian. A room in the library is also set apart for the use of the teachers.

(2) The travelling library scheme which is to come into operation this year in Ontario, admits, I believe, of a very desirable extension.

Each Public School Inspector's district should have a central library suitable for the teachers and pupils of the rural schools, under the charge and management of the Inspector. The books could be distributed by him from time to time amongst the different schools of his inspectorate, and, in this way, the public libraries, what Carlyle calls "*the University*," could be brought to every fireside. The system of exchange would make its value a maximum one. If the Legislature gave an annual grant for this purpose, supplemented by at least an equal amount from the county, an inestimable boon would be conferred on the rural districts. Such provision would, of course, only supplement the reference libraries which we hope to see some day in every Public and Separate School in the Province. I venture here to express the opinion—in which I believe many concur—that the general interests would not suffer if the amount of money for this purpose, say \$10,000 a year, were diverted from the present grant to Mechanics' Institutes.

School Boards and their Powers.

As I have already pointed out, one of the evils resulting from the competition amongst schools is the attempt often made to undertake work for which the staff is in-

adequate. The tendency is reinforced by the very natural desire on the part of even the smallest district to provide, itself, for all its educational wants. This is especially noticeable in the case of the two masters' and some three masters' High Schools. Here, again, we may learn from what is done in Massachusetts. There every centre of five hundred families and over must maintain a High School; but, when such centres cannot give a full curriculum, they must pay for pupils requiring advanced subjects, not only the tuition fees at another suitable centre, but the cost of transportation as well. The same obligation rests upon towns with a smaller population. Our High School Boards should, I think, be given the same power. Competition and natural local pride might for a time prevent them from using it, but such a provision would afford a relief, in the case of pupils requiring technical or Form V. work. The following is an extreme case, it is true, but it illustrates the situation. A year or so ago, I inspected a High School with only one pupil in Form IV. and about forty in each of the lower forms. On the basis of the teachers' salaries alone, this one pupil cost \$700, and the provision for the other pupils was quite insufficient. It would have been far better financially and educationally for all concerned had the locality paid this pupil's board bill and school fees at another school. Some principals, recognizing the situation, advise such pupils to go elsewhere; but, for evident reasons, the practice is not general. In this connection I may note also as a proof of the paramount importance attached to education by the people of Massachusetts, that last year a law was passed compelling street railways (which are very numerous in the state) to charge not more than half fare for the transportation of school children, whether such children reside in the city or town or any other city or town.

Here and there in this report I have spoken of the necessity for co-operation on the part of all the bodies connected with education—the Public School, the High School, and the Mechanics Institute (or the Free Library) Boards. We have Boards of Education in many parts of the Province; but, notwithstanding the fact that High and Public school Boards may amalgamate, few have availed themselves of the provision. The objection to union usually comes from the High School side. The trustees feel—often, I believe, without sufficient grounds—that, being in the minority, they might not be able to protect the interests they especially represent. No provision yet exists for union with the Mechanics Institute Boards—a provision which seems to be necessary if the libraries are to be the important factor in education they should be, and if technical evening classes are to be established and efficiently maintained. The separation of the School Boards is the survival of the theory which once existed, but which has now pretty nearly disappeared, that the Public School is for the lower and poorer classes and the High for the upper and richer. Owing to the genesis of the High School it would undoubtedly have been unsafe in the then temper of the people to risk the future of the secondary schools by entrusting it to the direct control of the masses. But the situation is now different.

In my judgment, the consolidation of the Boards could be more easily brought about if the law provided for the substitution therefor of a Board of Education composed of members partly nominated as at present and partly elected by the people at large. The ward system has serious evils; and, though now and then unsuitable members are found on the High School Boards, there are very few localities in which any but the best are appointed. Most of the Boards in the United States are, it is true, elected by the people at large, but by no means all of them. The principle of nomination to secure the presence of desirable members who would represent special educational interests or who would not submit to the ordeal of an election, is often fully recognized; and I found the general opinion to be, even in the home of democracy, that a School Board should be partly nominated and partly elected by the citizens at large. If the change proposed is too radical a one, the school trustees might be given representation on the Mechanics Institute Boards. The existence of separate Technical School Boards will only add to the complexity of our system.

Free High Schools.

When the late Chief Superintendent changed the name of our primary schools from "common" to "public," he did it for wise reasons. But the name "public" has turned out, I think, to be an unfortunate one; for it has tended to perpetuate

the theory that the Public Schools are for the general public and the High Schools for a richer class. In the United States all the schools—primary, grammar, manual and high—are now called Public Schools; and they are Public Schools, for all are the schools of the people, always under the same board, with free tuition and often with free textbooks. The High School there is no much the people's care as the Grammar School, and each city or town vies with its neighbor in ministering generously and munificently to the requirements of both.

How is it with us in Ontario? Of our 130 High Schools and Collegiate Institutes, 46 are free to residents and 18 are free to all; 33 which charge fees, charge none in Form I. to residents, and the average annual charge of those which charge fees for Form I. is \$8.29; 24 of them charging less than \$10.00. The time has not yet come, unfortunately, when all our High Schools can be made free by law. No one, however, who studies the history of educational movements can doubt that we shall eventually follow the example of the Republic to the south of us. Even on the low ground of economic expediency the course will be a necessary one; for we cannot otherwise compete successfully with the rival at our doors.

Probably the first step would be to make Form I. free by law. The difficulty that now exists here and there in adjusting to each other the High and the Public School system would then disappear.

I have now discussed the amendments that seem to me to be desirable in our course of study and in the associated subjects of departmental control. Even if my proposals meet with the approval of the Education Department, they cannot all be carried out at once. Any changes should be made gradually, and after due notice, so that all concerned—boards, teachers, and the general public—may prepare themselves for new conditions.

In Part I. I have dealt with some of the excellencies of the American systems and in Part II. with some of the defects of our own. I did not concern myself especially with the defects of the American systems, nor have I deemed it necessary to expatiate on the excellencies of our own. But to any one who has even a slight knowledge of the American schools, their main defects are evident—their excessive recognition of the principle of "Electives," the chance for the faddist to implement his schemes, and the lack of continuity in their courses and of thoroughness as we understand the term in Ontario. And I desire further to record my opinion that a proper combination of local and state control is most to be desired, that our type of High School teacher is not surpassed by the best I saw during my visit, and that the best products of the Ontario High Schools are in academic attainments the superiors and in intellectual capacity at the least the equals of the best products of the American systems.